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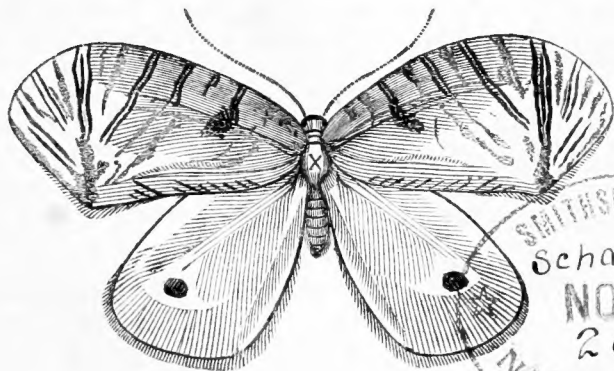
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“To understand the relations that insects bear to each other and to other objects, and to learn how best to check the ravages of the noxious tribes, we must make ourselves thoroughly acquainted with the natural history of these animals. This subject is particularly important to all persons who are interested in agricultural pursuits.” — DR. T. W. HARRIS, of *Harvard University, U.S.*



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## *A Revision of the British Species of Bees.*

By FREDERICK SMITH, Esq.

(Continued from vol. iii. page 338).

Fam. CUCULINÆ, *Latr.*

Genus CÆLIOXYS, *Latr.*

OF the genus *Cœlioxys* six species have been discovered in this country; they possess in common a striking resemblance to each other, and no very satisfactory characters have hitherto been pointed out whereby they may be separated with facility. This observation most rigidly applies to the males, Dr. Nylander having pointed out the constant deferential form of the apical ventral segment in the females: a careful examination of a vast number of specimens enables me to testify to the value of this character.

In the most common species, *Cœlioxys simplex*, the form of the ventral plate will be found to vary in some degree, but not more so than may be reasonably expected in a species that differs much more than any of the others in the size of different specimens. Great difficulty has hitherto been attendant upon an endeavour to separate the males of the different species: this difficulty I hope to be able to remove.

Our native species bear a very close resemblance to each other; all are black, and have the abdominal segments banded with white pubescent fasciæ; all have the abdomen of a conical form, and all of them are remarkable in having the eyes covered with short erect pubescence. This peculiarity is not characteristic of the entire genus, since many of the foreign species have the eyes naked, and these also exhibit considerable variety in colouring, some having the abdomen entirely red, whilst in others it is more or less so.

The type of the genus is the *Apis quadridentata* of Linneus, its female being the *A. conica* of the same author; the

typical specimens are preserved in the Linnean Society's collection. I am quite satisfied, after a most careful examination of the types, of their being the same species described under the name of *C. quadridentata* in the 'Bees of Great Britain.'

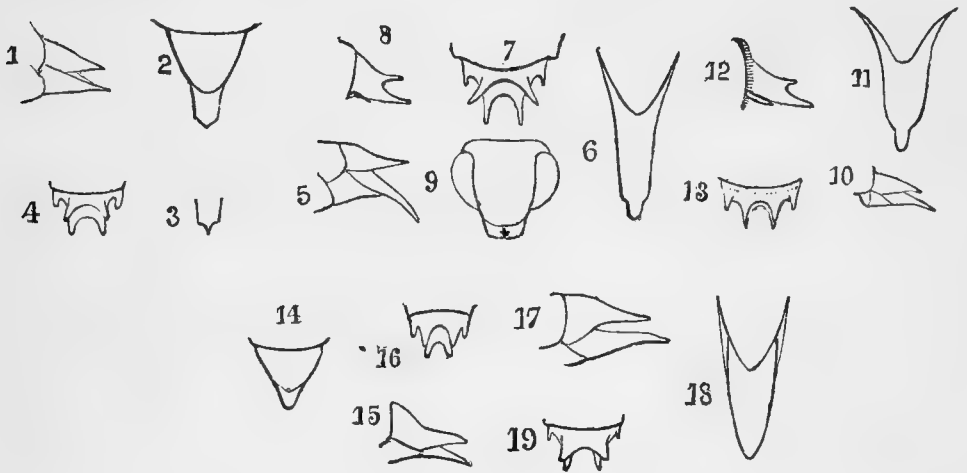
In Kirby's 'Monographia Apum Angliæ' a species is named "inermis;" it was taken by Mr. Trimmer at Brentford: the typical specimen is in the British Museum; I have carefully examined it, and can vouch for its being only an injured example of *C. simplex*, a male, with the thorax crushed; the scutellum being pressed down beneath the plate of the metathorax, by which the spines that arm the scutellum laterally are hidden; a minute examination, however, enables any person to detect the teeth, which are described as being wanting by Kirby.

I have very carefully examined both the Kirbyan and Fabrician typical specimens, the former being undoubtedly those described in the 'Monographia, the latter placed in the Banksian collection as representatives of Kirby's species. An examination of Kirby's insects shows that his *Apis conica* is the *Cœlioxys simplex*, male and female; the *Apis inermis*, as shown above, is referable to the same species. The three Fabrician species, *A. conica*, *A. tridentata* and *A. quadridentata*, are likewise all to be referred to the *C. simplex*. Some doubt must attach to the authenticity of the specimen of *A. conica* which is described in the 'Entomologia Systematica' as having "scutello inermi," the Banksian insect having the usual tooth on each side of the margin of the scutellum: probably the specimen from which the description was taken was, as suggested by Kirby, one of the leaf-cutter bees.

After a very careful examination of a long series of each species, I have detected such constant and marked differences as will, I think, render the separation of them a matter of little, if any, difficulty; I have also made a few drawings, in the hope of assisting more than a mere description can possibly do.

1. Both sexes of *Cœlioxys quadridentata* may be distinguished from all the other species by their having black spines at the apex of the intermediate and posterior tibiæ; in all the others the spines (calcaria) are more or less pale ferruginous: this character alone would serve to separate

them, but the female is also to be known by the broad lanceolate form of the apical anal segment, which is terminated by a narrower point, as shown in figure 11; 10 represents, in profile, the apical segments of the same sex; 13 is the apical segment of the male, viewed as above; and 12 is the profile of the same.



2. *C. simplex*. The female of this species is readily distinguished by its more elongate and narrower ventral segment; the abdomen is also proportionably longer than in *C. quadridentata*; in small examples the ventral plate tapers to a point, with scarcely any indication of the notch at the sides near the apex, being simply lanceolate; the normal form of the valve is shown in figure 6; the profile of the apical segment, showing the inferior plate to be much longer than the upper, is seen in figure 5.

The male may be distinguished by viewing the abdomen above, when the two upper spines at the apex will be seen to be directed outwardly, as shown in figure 7: these spines, in *C. rufescens* and in *C. umbrina*, are straight and parallel. At the lateral basal angles of the segment a minute spine will be observed very visibly projecting: this spine will also be found in the other species, but usually it is very minute, and never so prominent as in the male of *C. simplex*: figure 8 is the same segment in profile.

3. *C. rufescens* is very like *C. umbrina*, but is certainly a very distinct species; in both, the plates of the apical

segment of the abdomen, in the females, are nearly of the same relative length to each other; they are also of nearly the same form in both species. The abdomen of *C. rufescens* is very convex both above and beneath, much more so than in *C. umbrina*; the pubescence is of an ochraceous colour, the face being densely covered; the pubescence of *C. umbrina* is hoary, and the face of the insect only thinly clothed; in other particulars they also differ widely. *C. rufescens* is also a considerably larger species, being usually in length about six lines, *C. umbrina* never exceeding four and a half. Figure 1 is the profile of the apical segment of the female of *C. rufescens*; figure 2 represents the fifth, and also the apical ventral plate of the abdomen of the female; figure 3 is that of a rare variety in the form of the apical plate, it having a distinct spine or tooth at the apex. Figure 4 shows the apical abdominal segment of the male, the upper teeth being slightly divergent; in *C. umbrina* they are straight. Another distinguishing characteristic of the male of *C. rufescens* is, that in the middle of the fourth ventral plate of the abdomen there is a distinct notch; it is only to be readily seen by the aid of a pocket lens; the apex of the abdomen must be pointed towards the eye, when the notch will be distinctly visible in the middle of the margin of the fourth plate.

4. *C. umbrina* will be separated by attention to the preceding remarks; the females of *C. umbrina* and of *C. rufescens* are the only ones that have the apical plates of the abdomen of nearly the same length. Figure 14 represents the form of the two apical ventral plates in the female; 15 is the same in profile, and 16 the apical segment of the male.

In my work on 'The Bees of Great Britain,' I quoted *Cœlixys mandibularis* as a probable variety of *C. simplex*: at that time I only possessed a single example; subsequently I obtained it from Carlisle: my first specimen was from Yorkshire. The male I do not know, and that sex was not known either to Nylander or Bohemann, to both of whom I showed my unique British example. I am now quite disposed to consider it a good species. The species named "sponsa" in my work I suspected to be the male of *C. simplex*, and since the publication of my book Mr. Newcombe, of Dartford, bred both sexes of *C. simplex* from a nest of *Megachile ligniseca*, the male proving to be my *C. sponsa*.

5. *C. mandibularis* is distinguished from all the other species by its prominent geniculated mandibles, the basal half being thickly covered with pubescence; the wings have a distinct fuscous border on the apical margins, not extending to the enclosed cells. The form of the apical segment is very similar to that of *C. simplex*: a series of examples is required in order to ascertain in what particulars it further differs from *C. simplex*.

6. *C. Vectis* is the largest known British species; its snow-white widely interrupted marginal bands on the abdomen, in connexion with the form of the apical ventral segment of the abdomen of the female, readily distinguish it from the same sex of the other species; the colour of the abdomen, so intensely black, its coarse punctuation, and the lateral snow-white fringe on the margins of the abdominal segments, at once distinguish it: these patches of fringe are narrowed to a point inwardly.

#### 1. CÆLIOXYS 4-DENTATA.

*Apis 4-dentata*, *Linn. Faun. Suec.* 422, male; *Syst. Nat.* ii. 958.

*A. conica*, *Linn. Faun. Suec.* 443, female; *Syst. Nat.* ii. 958.

*Cælioxys 4-dentata*, *Smith, Zool.* iii. 1151; *Schenck, Bees of Nassau*, 364, male, female.

*Cælioxys acuta*, *Nyland. Mon. Apum Boreal.* 250, female.

This species is not found in the London district, at least I never knew of its occurrence; I have taken it at Deal, and in Suffolk, at Lowestoft; Mr. Rothney found it near Ipswich. I do not know what bee it is parasitic upon. I have rejected all the synonyms which I could not confirm by an examination of specimens. The Fabrician and Kirbyan insects both belong to the next species.

#### 2. CÆLIOXYS SIMPLEX.

*Apis conica*, *Fabr. Ent. Syst.* ii. 341, female; *Kirby, Apum Angl.* ii. 224, male, female.

*Anthophora conica*, *Fabr. Syst. Piez.* 380.

*Apis inermis*, *Kirby, Mon. Ap. Angl.* ii. 229, male.

*Cælioxys conica*, *Curtis, Brit. Ent.* viii. fol. 349, pl. 349, figs. 6 and 7.

*C. simplex*, *Nyl. Revis. Apum Boreal.* 279, female; *Smith, Bees Great Brit.* 147; *Schenck, Bees Nassau*, 369.

*C. sponsa*, *Smith, Bees Great Brit.* 147, male.

This is the most abundant species of the genus in the London district. I have received it from all parts of the country. It is parasitic upon *Megachile ligniseca*, *Willughbiella*, and also upon *M. circumcincta*.

### 3. CÆLIOXYS RUFESCENS.

*Cælioxys rufescens*, *St. Farg. Hym.* ii. 519; *Blanch. Hist. Nat. des Ins.* iii. 413; *Smith, Bees Great Brit.* 149; *Schenck, Bees Nassau*, 366; *Nyl. Revis. Ap. Boreal.* 279.

*C. apiculata*, *Nyl. Ap. Boreal.* 282, female (var.)

*C. hebescens*, *Id.* 251, male, female.

This is a local species, but very plentiful in some localities; in the Isle of Wight it is common, particularly so along the Undercliff. I suspect it is parasitic upon *Megachile maritima*, having repeatedly found them in the same situations. I have obtained specimens from Suffolk, Norfolk, Devonshire, Kent and Hants; it is scarce in the London district.

### 4. CÆLIOXYS UMBRINA.

*Cælioxys umbrina*, *Smith, Zool.* iii. 1153; *Bees Great Brit.* 148; *Schenck, Bees Nassau*, 367.

In 1839 I first took this species in Hampshire, entering the burrows of *Saropoda bimaculata*; subsequently, in the year 1851, I found it in abundance in Sandown Bay, Isle of Wight, in company with the same species, which abounds in that locality; I have not found it in any other situation. Its time of appearance is about the middle of July: it frequents the flowers of the bramble.

### 5. CÆLIOXYS MANDIBULARIS.

*Cælioxys mandibularis*, *Nyland. Mon. Ap. Boreal.* 3, female.

*C. simplex*, *Smith, Bees Great Brit.*, var. ?

This species I have received from Carlisle; I also took a single specimen in Yorkshire.

## 6. CÆLIOXYS VECTIS.

*Cælioxys vectis*, *Curtis, Brit. Ent.* viii. fol. 349, pl. 349, female; *Smith, Zool.* iii. 1152; *Bees Great Brit.* 150, pl. ii. fig. 5, female.

*C. punctata*, *Schenck, Bees of Nassau*, 368.

*C. temporalis*, *Nyland. Ap. Boreal.* 253.

This may possibly be the species described by St. Fargeau, and named by him *C. punctata*; indeed I am inclined to believe that the female is so; certainly not the male, which is described as having red pubescence on the face, which *C. Vectis* has not: be that as it may, Curtis described the species in 1831, St. Fargeau not until 1841. I therefore conclude that Professor Schenck did not know that the name *Vectis* had the priority. The species is local, but has been taken plentifully at Fulham and sparingly at Croydon. It was first discovered at Black Gang Chine, by Mr. Curtis; I found it very plentiful in Sandown Bay, Isle of Wight, in the middle of July, 1852. It is parasitic upon *Megachile maritima*. It is not uncommon at Lowestoft, and is found on Mousehold Heath, near Norwich.

The genus *Cælioxys*, as well as one or two others belonging to the Aculeate Hymenoptera, have a peculiarity attaching to them, probably in some way connected with their preservation, being in fact a means of passive defence. It is well known to entomologists that many insects secrete and discharge peculiar noxious fluids; others emit offensive odours; in both cases, it has been suggested, for the purpose of self-preservation. Hitherto observation has been principally, in this respect, directed to Coleoptera and the larvæ of some Lepidoptera; indeed, attention has lately been called to the fact of several species of butterflies possessing a most offensive odour, for the purpose, it has been suggested, of rendering them obnoxious to insect-feeding birds.

I am not aware of any one having referred to this subject in connexion with the Hymenoptera. Mr. Kirby has noted the strong aromatic perfume emitted by several bees: of the genus *Prosopis* he observes that "when pressed between the fingers they emit a powerful, and at the same time agreeable, scent of balm;" he also refers to a species of *Crabro* that

emits a "very stimulating effluvium of æther;" and he quotes Pallas's observation on the *Bombus fragrans* "fœminæ odore roseo fragrantissime," he having himself remarked the same scent in a male of that species. Having myself discovered the nest of *B. fragrans*, I can testify to the powerful and agreeable scent emitted by a colony of this bee when their domicile is disturbed, and the community thrown into a panic of disorder.

The species of the genus *Nomada* also exhale a very agreeable perfume; but I do not think all the parasitic bees are odoriferous, not having observed it in the genera *Epeolus*, *Melecta* or *Stelis*, but I cannot state positively of these genera.

Why some species of bees are, as it were, perfumed, and others not so, it is difficult to assign even a satisfactory conjecture: when the odour they emit is so aromatic, resembling that of herbs and flowers, we cannot imagine it to be a protection from enemies. Many hymenopterous insects, however, emit most offensive exhalations; I believe all the Ichneumons do so in a greater or less degree: those belonging to the genera *Pimpla* and *Rhyssa* are very obnoxious in that respect, whilst *P. instigator* and *P. æthiops* are most disgustingly offensive.

In the species of the genus *Cœlixys* we have an instance of the same character, and when several individuals are held in the hand together, whilst living, the odour they emit is extremely offensive. Such a provision has doubtless a particular purpose: may it not be the means of securing the parasite from molestation when engaged in the act of oviposition in the nest of the working bee? Such may be the case, but I have never observed any pugnacity exhibited by the constructor of the nest towards the intruding parasite. Shuckard records an instance of this kind: speaking of the genus *Anthophora*, he says, "They are subject to the parasitism of the genus *Melecta*, whose incursions are very repugnant to them, and which they exhibit in very fierce pugnacity, for if they catch the intruder in her invasion they will draw her forth and deliver battle with great fury." Such an occurrence can, I think, only be an occasional one, as I have watched these bees issuing from and entering the burrows of *Anthophora*, on very many occasions, without observing such



an encounter. Melecta, although a parasite, has not the slightest disagreeable odour, which, if my conjecture be correct, might secure her from molestation.

FREDERICK SMITH.

(To be continued).

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*Variation in Lepidoptera.* By C. S. GREGSON, Esq.  
(Continued from vol. iii. page 267).

Amongst the Sphingina few varieties occur until we reach the genus Sphinx; and in my collection there is only one specimen worthy of notice: this is a *Sesia bembeciformis*, which has the whole of the ordinary yellow segment of a deep rich orange. *Sphinx Convolvuli* varies much both in size and markings; I possess one specimen three inches in expanse of wings, and more intensely marked than any I have seen.

*Smerinthus Tiliæ* and *Populi*. Of this variable species I have specimens entirely without the central markings, and others with simply a central spot or dash; and one in which these marks form a solid unbroken band across the wing. Of *Smerinthus Populi* I possess two specimens of a light unicolorous fawn-colour: the expanse of wings is only two inches and two lines; yet from these small almost markless females I bred some of the very finest and most distinctly marked specimens I possess.

Of the genus *Zygæna* I can scarcely venture to speak, *Z. Trifolii* rarely producing two specimens alike, whilst *Z. Loniceræ* rarely, if ever, varies in its markings, except in the size of the spots: but I possess specimens of a *Zygæna* having long pointed fore wings and intense red markings, which should be called a "three blotch;" the basal costal mark is long and narrow, the outer mark club-shaped, and the inner basal mark carried out nearly to the extent of the outer mark, and only being divided from it by the central nerve; the inner margin of this blotch is a regular curve, not notched out as in all blotched typical *Trifolii* which I have seen. Of *Z. Filipendulæ* I have many blotched specimens; in some the outer spots coalesce, in others both central and

outer spots do so ; in one specimen all the spots join and form a longitudinal zigzag blotch through the wing, the basal outer mark being carried out, for three-fourths of the length of the wing, as a red streak, defined by the costal and sub-costal nerves ; and one specimen has the whole of the upper wings red, except a rather broad dark margin from the apex to the inner margin : this specimen has been the subject of much conjecture, but as it was taken amongst *Filipendulæ*, and where *Trifolii* has never been observed, and as the red comes out below as in *Filipendulæ*, whereas in *Trifolii* the lower spot is always far behind the outer upper mark, I call it an aberrant *Filipendulæ*, though my esteemed friend Mr. Newman seemed disposed to think it a distinct species.\*

*Euthemonia russula*. One male, marginal band of inferior wings obsolete ; one male, under wings dark, except a discal light patch ; another nearly like it ; and two females with entire dark brown inferior wings, except only two small light spots.

*Chelonia Plantaginis*. Of this permanent species I have four good and well-marked aberrations : the most striking is a male having the first third of the superior wing of the ground colour, the usual large costal mark very small and enclosed within a brown lozenge-shaped mark ; and a female with the outer third of the wing light, the usual X-like marks being lost for want of the dark outer costal and outer angular marks.

*C. caja*. This gorgeous species has long had my special attention, and the results of many thousand specimens, bred by myself and by others, are before me as I write. To describe some eighty specimens, all varying from the type, is rather more than I can do, perhaps more than is advisable ; suffice it to say that the first row is composed of suffused specimens, generally upon the under wing or wings, sometimes upon the upper wing or wings. In the first row is a fine male having one under wing almost black, except a broad yellow well-defined border, the other wing not being quite so covered with dark scales, but the border exactly as in the first-named. Another is a fine female, one upper wing of

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\* I have no recollection of having seen the specimens in question.—*E. Newman*.

which is smoky to the apex, the other side only at the apex. The next row need not be described, but the third row is composed of very dark specimens, and amongst them are some peculiar forms; one with dark brown upper wings, except a small light basal mark on each wing, and a straight streak across the wing near the last third very small. On one side the under wings are broad-banded and suffused inside, the outer margin distinct. Under this is a peculiar brown-upper-winged specimen, with light slightly smoky under wings; and below that a magnificent dark upper-winged specimen, having a few very small light streaky marks; the under wings intense purple velvety black, somewhat metallic in appearance: these last two were fed upon coltsfoot (*Petasites vulgaris*). The next row is composed of light specimens, the most striking being one with very few brown markings on the upper wings, and only having one very small brown mark upon the under wings; and near it is a specimen possessing most of the typical marking, but entirely devoid of any central under-wing spot; two instances only of this mark being wanting have come under my eye: both specimens were taken by Mr. Davis, at Southport, but in succeeding years, and both were given to me.

*Arctia lubricipeda*. Amongst several varieties, more or less well marked, is one specimen having a spotted basal band across the upper wings; these are arched outwards; streaky dark broad band and an apical streaky mark; the under wings with a broad dark blotchy band,—a very striking aberration.

*A. Menthrasti*. This species varies much in colour and in the number and intensity of its markings, but in this neighbourhood it does not often sport into the variety *Walkerii*; one specimen, given me by the late Mr. Tiltman, is perhaps equal to any specimen of *Walkerii* I have ever seen; and the next specimen is even a more strange aberration: it has rather faintly spotted superior wings, as in ordinary specimens, with dark longitudinal streaky or long blotch-like markings upon the inferior wings.

*A. Mendica*. I have one hermaphrodite having male and female antennæ, and of a light smoky colour throughout; one pure white, except only two indistinct central nerve-spots upon the upper wings; one large female slightly

smoky, with a darkish costal margin continued darkish round the cilia; and one dark smoky well-marked female, having a dark brown costa and cilia: this is perhaps the most striking aberration imaginable, and one which, seen by itself, would severely test the discriminative powers of our best aberrationists, but, placed as it is in my long series of variously marked and coloured specimens, some of which lead gradually up or down to it, there is no difficulty in assigning it a place and a name.

*Liparis Monacha*. Of this variable species little need be said, further than that I possess it from very light to almost suffused black.

*L. dispar*. I have one small male, bred, with shoulders light brown, outwards of that and under wings very light stone-colour; and two large bred males, from the same brood, unicolorous dark brown upon all the wings; the lunate discal marks are small, but distinct, upon the superior wings.

*L. auriflua*. I possess one male having a basal dark blotch, also one apical, one central, and one large anal blotch: this is the only specimen that I ever saw of this species worthy to be called a variety.

Passing over a number of permanent and variable species, I now come to *Odonestis potatoria*, of which I possess one large female having the head and front of thorax dark black-brown, and the whole insect rich brown-ochre; one female is light yellow within the oblique apical streak, but outside that it is rich brown-ochre continued through the under wings; three females, light whitish buff, from Whittlesea Mere: this is the Whittlesea Mere variety.

*Bombyx Trifolii*. I have two females of a rich deep red-brown, and having the usual curved marking almost obliterated.

*B. Quercus*. I have one male, expanding about one inch and six lines, of a light buff-brown, with distinct shoulder-marks; two large bright light-red males; one small dark male, expanding an inch and three-quarters, without any shoulder-mark; one male in dark female colouring; one dark male, entirely wanting the usual curved markings through the wings; one fine male having only a faint indication of marking upon the under wing; one fine female like it; one

large female, entirely without any under-wing markings; and another beautiful specimen, also a female, of a dark olive-green brown, without any markings whatever upon it, except a faint indication of the central light spot; and below that specimen is a fine female in male attire, of a deep rich brown, with waved striga well-defined and shoulder-marks fairly defined: these latter all belong to the generally recognized group *Roboris* of Stephens, now sometimes called *Callunæ*, but why so called I could never understand, unless its author, who once wrote an entomological paper in the 'Zoologist,' is supposed to have proved it distinct from the old *Roboris*, or from the following series of broad straightish-bordered specimens, principally given to me by Mr. Doubleday, as the *Quercus* of his Catalogue and of the South of England. In this series is one male, bred by Mr. Hague, having the dark of the upper wing cut straight across and not curved, one female cut circularly, and one male cut so that the costal point is outwards, whilst, in all the southern specimens I possess, the dark portion of the wings is cut somewhat, but slightly, angularly, so as to point inwards.

*Saturnia Carpini*. One male so dark that its capturer called it the Emperor of Morocco; three barren females approaching the colouring of males.

C. S. GREGSON.

November 9, 1867.

(To be continued).

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*The Lepidoptera of Labuan.* By Dr. C. COLLINGWOOD.

ALTHOUGH the Lepidopterous insects of Labuan cannot vie with those of South America, as a rule, either in size or in beauty, there are a great number of considerable interest and of striking appearance. They are of course derived from the mainland, and less numerous than those of the Bornean coast; but inasmuch as the jungle of Labuan is extremely fine, and far more accessible than that of the opposite coast, a large number of handsome species may be obtained with comparative ease. The only way to capture the best species is to pursue them into the jungle, though a considerable

amount of skill is necessary to overcome the difficulties. The net becomes an awkward instrument in a tangled forest, and the only available method is to watch for them in small open spots, and seize upon those which pass, for pursuit is next to impossible. Many of the species fly with amazing rapidity and strength of wing, and in some cases pursue a straight line through the maze of branches, eluding nearly every attempt to capture them, except by stratagem. Others, often the most handsome insects, fly habitually so high that they are usually out of reach of the net. In all such cases the sacrifice of a single specimen will often secure others, for butterflies are gregarious; and a dead specimen pinned upon a conspicuous twig will often arrest an insect of the same species in its headlong flight, and bring it down within easy reach of the net, especially if it be of the opposite sex. Sugaring the trees has not been tried by entomologists in this part of the world, and the use of a lamp behind a sheet, found so effectual for nocturnal captures by Mr. Wallace, has not yet been seriously tried.

The jungle-road, extending nearly across the island, and the skirts of the jungle, always proved to me the most prolific spots, the insects dashing out for a little distance, and pursuing their erratic flight through the open, in which case, if near, there was a chance of a capture. But even here it was often tantalizing to see a rare and beautiful species fly out of one side of the jungle, cross the road with the speed of a race-horse, and irrecoverably disappear in the thicket on the opposite side, almost before one could draw breath. The swift flight, now over the tops of the trees, now down near the ground, was characteristic of the Pieridæ, while the Papilionidæ distinguished themselves by their strength of wing and straight headlong course.

Another source of disappointment arose from the fact that not unfrequently, when one thought oneself fortunate in capturing a fine insect, after carefully disentangling him from the net, his wings turn out to be so torn and rubbed as to render him almost useless, except indeed as a decoy. This circumstance is due, I imagine, partly to their frequent battles with one another, in which they whirl round one another with the greatest rapidity, and appear to be incited by the greatest ferocity, and partly to their habit of flying

rapidly through the interlacing twigs and foliage of the jungle.

Certain species could always be found in particular spots; the orange and pumilow trees in the plantations always abounded with the handsome large red and black *Papilio Memnon*; grassy nullahs sheltered abundance of small ocellated species; *Papilion Pammon* floated over every hedge-row, and certain bushes always harboured some swift-flying pale yellow *Pieris Namouna*; even a patch of sandy sea-shore generally produced a large buff insect (*Charaxes*), which was fond of alighting upon it, matching it well in colour, so that it was not difficult to secure it. But, without going into the jungle, only about half a dozen common though handsome species could be met with in a morning's ramble, unless, as when, by a fortunate accident, I captured a magnificent yellow satin *Ornithoptera*, in a pleasure-garden.

During a month I succeeded in taking upwards of sixty species of butterflies in Labuan, a very respectable number for so brief a time, and showing considerable richness of the island in this respect. No complete collection has hitherto been made, though I have seen about a hundred and fifty species in one cabinet; but a gentleman of the garrison, who has lately arrived there, after a long apprenticeship among the *Lepidoptera* of Malacca, is now busy with his net, and will doubtless soon make more species known. When the road above mentioned was in process of formation through the jungle, some years ago, butterflies were so abundant that they are described as having flown about in perfect clouds, and I am credibly informed, by Mr. Low, that as many as two dozen could be taken in a single sweep of the net. For the same reason probably, cleared ground near the jungle is always most productive of butterflies; and as it is well known that wherever ground is newly cleared new plants immediately spring up, so also, under similar circumstances, a new species of butterfly is likely to occur in the first season after a clearance; but although it may be in profusion then, it does not follow that it is so in succeeding seasons; and the opportunity of securing specimens should not be lost on account of the insect appearing to be so common. As an example of this it may be mentioned that when the compound surrounding Mr. Low's house was cleared a beautiful

species of *Apatura* appeared in myriads, and was abundant all that season, but ever since that time not more than one or two specimens have been observed each year.

The dominant species in Labuan are certainly a *Danais*, abundant everywhere, and *Neptis Aceris*; many *Cynthia Arsione* are met with; and perhaps the most striking and extraordinary of all the *Lepidoptera* is the magnificent though common moth, *Nyctalemon Hector*.

In the immediate neighbourhood of Labuan there are two small islands; one entirely covered with jungle down to the water's edge; the other formerly jungle-grown, but now for the most part cleared for cocoa-nut plantations, but still retaining a small patch of the virgin forest. I paid a visit to the latter, and soon discovered that it abounded in the most magnificent of the jungle species, for the island, although small, is nearer to the mainland than Labuan, and, in the tangled jungle which has been allowed to remain, the most exquisite dragon-flies vie with the butterflies in beauty. Moreover, a walk with a net under the boughs of the great trees which overhang the beach, and sometimes impede the passage at high water, gives ample employment for the net, the jungle species coming constantly out and skirting this open space. Here I was sure to meet with species, without difficulty, which in Labuan I might have searched for all day in vain, and many long rows and sails I made to this rich locality. The time which I found favourable for capturing them was from 7 A.M. to near 11; before 7 I have found scarcely any stirring, and as noon approaches they almost suddenly disappear. A few return in the afternoon, but scarcely sufficient to make a walk profitable. Thinking that the other island might be equally rich, I went with my net to visit it, but alas! I only saw, in all its verdurous depths, two butterflies, *both* the commonest species of *Danais* and *Terias*; and was the more vexed, on my return, to learn that the morning had been remarked in Labuan as one singularly favourable to *Lepidoptera*, which had been flying about in unwonted abundance. Looking for some cause for this difference between the two islands, I imagine that the first-mentioned abounding in pools of water gave it more favourable conditions for butterfly existence; while in the latter,



as I could nowhere meet with a drop of water, so also I could find no Lepidopterous insects.

C. COLLINGWOOD.

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*Entomological Notes, Captures, &c.*

*Eupithecia fraxinata* at *Huddersfield*.—I took a fine specimen of this insect under an ash tree in a garden here, about the middle of May last; it had evidently just emerged from pupa, as the wings were quite limp. Has it been recorded from this locality before?—*G. T. Porritt*; 8, *Clare Hill, Huddersfield, November 4, 1867.*

*Satyrus Tithonus a Scotch Insect*.—In your 'History of British Butterflies' you mention that *S. Tithonus* is *not* known in Scotland: I beg to say I have found it common in Kirkcudbrightshire, where also, this summer, *Vanessa Cardui* was tolerably abundant.—*W. D. Robinson*; 2, *Shandwick Place, Edinburgh.*

*Retinia Buolina*.—In the spring of this year the larvæ of this moth were only too plentiful in the buds of different species of *Pinus* in my garden. *P. insignis* suffered the most; next in order *P. sylvestris*, *P. austriaca* and *P. excelsa*; I also observed elsewhere the result of the ravages of one in a specimen of *P. Benthamiana*, and have no doubt that all the genus suffer more or less from it. The larva is hatched (? sometimes) in the autumn, and in October or November they may be found in the dormant buds. If an opaque and hollow resinous exudation should be observed on a bud, or between and uniting two, the presence of a larva may be assumed; and on removing the resin you will either find the enemy or a minute hole by which he has entered the bud. In April and May, when the buds start, the larva feeds actively, and mounts upwards with the shoot, eventually emerging as a pupa at or near the top: the effect often seems to be very like that of an *Ichneumon* on the larva itself; the shoot becomes full-grown and then dies. No doubt a vigorous tree is seldom or never killed; after the larva is full-fed the tree makes a second growth; but a weakly one, and particularly after removal, may die, as did many of my *P. insignis*, either from this cause or the severe

frost, or both combined; and other species of *Pinus* made no good growth and were distorted, being permanently spoiled in symmetry of appearance. I cannot indicate any remedy, except picking out and killing, which is very tedious work on a number of trees; can you or any of your correspondents? — *N. C. Tuely; Mortimer Lodge, Wimbledon Park, S.W.; November 26, 1867.*

*Larva of Melanthia ocellata.* — In this month's number of the 'Entomologist' you give a description of the larva, &c., of *Melanthia ocellata*, which differ very materially from the habits of the same species here. I have taken the larvæ full-fed in September and October, and these all, as also others reared from the egg, spun their silken webs, but did not change to pupæ until the following spring. I have found the same peculiarity in *Larentia salicata*, eggs of which hatched July 21st, spun up August 17th, but did not change to pupæ till spring; so far as I recollect, the time of pupation was either two or three weeks in both species. In rearing *Pelurga comitata* I have always found them bury in the earth, forming cells, but spinning no cocoon. *Larentia multistrigaria* here has a black pupa, not reddish, as described some years ago in the 'Zoologist' (p. 7324) by Mr. Crewe. — *Andrew Wilson; 21, Young Street, Edinburgh, November 1, 1867.*

*Phibalapteryx lapidata in the Kyles of Bute.* — I have this year taken a single specimen of *P. lapidata* on the Kyles of Bute, 400 feet above the level of the sea: it was flying in the early evening, in a marsh or gullet between two abrupt hills. — *John Dunsmore.*

*Satyrus Hyperanthus without Rings.* — Would any of the readers of the 'Entomologist' be kind enough to inform me whether they have captured any specimens of *Satyrus Hyperanthus* without either rings or black spots on either side? I took one such as I have described at Darenth Wood, Dartford, in the summer of 1866. — *A. Pitman; 8, Dacre Park, Blackheath.*

*Second Brood of Pyrameis Cardui.* — The second brood of *P. Cardui*, which I made a note of (Entom. iii. 363), have turned out a failure. The larvæ fed up well, and changed to pupæ between the 2nd and 24th of October, the pupæ looking equal to the first brood. After remaining in that

state six weeks they came forth cripples, with the exception of two, which expanded their wings with difficulty, then retired to a corner of the breeding-cage, and expired in the course of three or four days. The first brood remained in pupa from ten to fourteen days.—*W. West* ; 6, *Green Lane, Greenwich, December 11, 1867.*

*Acidalia interjectaria* and *Cochylis mussehliana*. — It fell to my lot last spring to make a long stay in Germany, and whilst at Aix-la-Chapelle I enjoyed the privilege of looking over the magnificent collections of European insects and plants formed by Herr Kaltenbach, well known to English entomologists as the discoverer of the larva of the genus *Micropteryx*. The Lepidoptera had been arranged under the eye of Dr. Staudinger, and were therefore well calculated to be of service in the identification of species, in order to ascertain their right names. In going through the genus *Acidalia* I at once remarked that the species which we have in our cabinets under the name of "ossearia" is the dilutaria of Hübner and the interjectaria of Boisduval. The true ossearia (supposing Dr. Staudinger to be correct in his opinion) I have not yet seen in any cabinet in this country : it is a larger insect than interjectaria, the wings are longer and not so rounded, and the colour of the costa is unquestionably *rufous*, or, as M. Guenée describes it, the colour of our penny postage-stamp. I should be glad to learn from any of your correspondents whether they have taken the true ossearia. Among the Tortrices in Herr Kaltenbach's collection I noticed a fine series of *Cochylis mussehliana*, a species of which I believe very few examples have occurred in this country, and the larva of which feeds on the stems of *Alisma plantago*. With his usual kindness Herr Keltenbach presented me with a pair of mussehliana ; but on reaching home, and comparing them with a single specimen in my possession, taken some years ago in Devonshire and named by Mr. Doubleday, I find no resemblance whatever. On the other hand the continental specimens of mussehliana appear to be identical with the "griseana" *vel* "udana" of our cabinets ! Can Mr. Doubleday clear up this little difficulty? —(*Rev.*) *Henry Burney* ; *Wavendon, Bucks, November 11.*

*Food of Endromis versicolor*. — Would you be so kind as to inform me if the larva of *E. versicolor* will feed on any

other tree or shrub except birch, and, if so, what other food would be suitable? Would either apple or hawthorn do? —*H. McDowall; Kettering, Northlands.*

*Fluid ejected by Lepidoptera on assuming the Imago state.*—[The Rev. H. J. White inquires whether fluid ejected by Lepidoptera, on assuming the perfect state, is injurious to the pupæ of other insects on which they may happen to fall: he particularly desires Mr. Greene's opinion, and that gentleman has kindly replied as under.—*E. N.*]—I am sorry that I could not answer your letter sooner, but I have been much occupied. I do not think I can give any satisfactory answer to Mr. White's question. I fancy that the fluid, if it fall on a *small* pupa, has an injurious effect, as it probably "smothers" it. As far as my experience goes, it does not injure the larger ones. At the same time it may be better to avoid the risk as far as possible. I always remove the fluid, if I see it in time. I am glad to hear that the 'Entomologist' progresses favourably, and I hope it may continue to do so. (*Rev.*) *J. Greene; 49, Stephen's Green, Dublin, December 9.*

*Mould on Pupæ.*—Can you tell me the reason of mould appearing on the pupæ of Lepidoptera? I have now some pupæ of *S. Ocellatus*, *Ligustri*, &c., and on the pupæ I find a lot of whitish mould (I have them on some soil covered with about five inches of moss). If you could tell me the reason and the remedy, in the next number of the 'Entomologist,' I should feel extremely obliged. —*S. J. Barnes; Trafalgar Road, Moseley, December 14, 1867.*

*Keeping Larvæ through the Winter.*—I have some larvæ of *Orgyia fascelina*, *Bombyx Rubi*, *B. Quercus*, and *Angerona prunaria*, all of which I find hibernate as larvæ. Will you kindly tell me the best way of keeping them alive during the winter, and how soon they will lay up, as I am anxious to breed them and keep them alive?—(*Miss*) *J. Pycroft; 18, Paultons Square, Chelsea, December 19, 1867.*

[The larvæ of *Bombyx Rubi* must be placed out-of-doors, exposed to all weathers, throughout the winter: the others may be left in the usual breeding-cages. All hibernating larvæ retire as soon as the leaves of their food-plant fall.—*E. Newman.*]

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# THE ENTOMOLOGIST.

No. 50.]

FEBRUARY, MDCCCLXVIII.

[PRICE 6D.

*Description of the Larva of Anarta Myrtilli.*—When full-fed it rests with the 2nd, 3rd and 4th pairs of ventral claspers, as well as the anal claspers, firmly attached to the food-plant, the anterior part of the body raised, and the head bent under Sphinx-like; the first pair of claspers are held free: when disturbed it falls from its food-plant and rolls into a compact ring, but does not long retain that position, soon unrolling itself and crawling with considerable activity. The head is of the same width as the 2nd segment, the cheeks rounded, the crown not conspicuously notched, the whole extremely glabrous, yet emitting several bristles: the body is uniformly cylindrical. The colour of the head is pale transparent green, with a number of dark brown dots; the 2nd segment of the body has a dull green plate occupying its entire dorsal surface; the remainder of the body is olive-green, decorated with numerous pale markings; there is a medio-dorsal series of eleven spots, all of them guttiform or elongate-oval; on each side is a series of eleven spots, almost semicircular, but not perfectly so, and each of these is divided at the junction of the segments; there is still another series in the region of the spiracles, and these are more united, forming a zigzag line; the spiracles themselves are white; each is surrounded by a black ring; the ventral surface has a chain-like series of pale markings, extending to all the segments except the 2nd, 3rd, 4th and 13th: the legs and claspers are of the ground colour, but each has a pale streak at the base, and on all parts of the body are numerous smaller markings, intervening between those I have described: these various markings are far from constant in form, number or colour; their ordinary colour is that called *albidus* in Latin descriptions, an impure white, but sometimes they are pure white and sometimes tinged with yellow; in one specimen I find the lateral series alternately pure white and dingy white; the dorsal area also varies in tint, bright green, olive-green, olive-

brown and bottle-green; and the lateral ornamentation is sometimes varied with a darker ground colour, encroaching on and almost eclipsing the paler markings. It feeds on *Calluna vulgaris* (common ling), and I have found it full-fed in July and again in September. I am indebted to Mr. Wellman for a bountiful supply, still vigorous at the beginning of October. The moth appears on the wing twice in the year, in May and August. This species affords an excellent instance of the folly of copying descriptions of larvæ from foreign works; Guenée observes that it has been travestied by Esper, Treitschke and Duponchel, the first of whom describes it as having angulated segments like *Batis*; the others supply it with salient quadrangular spines. We happily live in an age which is rectifying such errors as these, and the labours of Guenée, Millière, Hellins, Buckler and Crewe, will shortly supersede the fictions which have so often been accepted as truths. It is, however, to be regretted that my friend Doubleday, who stands at the head of all observers, ancient or modern, publishes so few of his observations: ever willing to impart his knowledge verbally, he rarely gives it to that world of Entomologists in a form to be universally useful.—*Edward Newman.*

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*Proceedings of the Entomological Society of London.*

*November 4, 1867.*— Professor Westwood, Vice-President, in the chair.

Mr. M'Lachlan exhibited, on behalf of Mr. B. Cooke, two examples of gynandromorphism. The first, a sawfly, *Dolerus madidus* of Klug, the left-hand side presenting male characters, the right side female characters. The second, a Trichopterous insect, *Limnephilus striola* of Kolenati, in which the palpus, antenna and wing on the right-hand side were of the male form, and on the left side of female form, whilst the abdomen was wholly female: this specimen was captured by Mr. Cooke near Manchester.

Mr. Bond exhibited three recent additions to the list of British Lepidoptera, namely, *Psyche crassiorella* of Bruand, *Grapholitha ravulana* of Herrich-Schæffer (exhibited at a previous Meeting, but then unnamed), and *Coccyx vernana* of Knaggs.

Mr. T. W. Wood exhibited a number of pupæ of *Papilio Machaon*, *Pieris Brassicæ* and *P. Rapæ*, exhibiting various shades of colour corresponding with the colours of the surfaces to which they were attached; and read the following remarks on the coloration of chrysalides:—“All Lepidopterists are probably aware of the very great variability in the colouring of the chrysalides of butterflies, and I am able to state, as the result of some years of observation, that their colours are more or less derived from the objects in their immediate vicinity. It is obvious that this assimilation of their colours to their surroundings is of great use to them, tending to their concealment and consequent immunity from the attacks of enemies during their period of exposure in a helpless state. The specimens of chrysalides on surfaces of different colours which I now exhibit are, I trust, sufficient to convince you of the truth of this statement. I find, as the result of my experiments, that the skin of the chrysalis is photographically sensitive for a few hours only after the caterpillar's skin has been shed, and, as might be expected, by putting the specimens in the sunshine at the time of changing, and surrounding them as much as possible with any desired colour, the most successful results have been obtained. Under these conditions the specific markings are almost entirely overpowered if necessary to the assimilation of colour; and these markings are, in fact, entirely overpowered in the exhibited green varieties of *Papilio Machaon* and *Pieris Rapæ*. I have not had an opportunity of seeing the former species in its natural haunts, but the latter I have observed, and have found the green variety of the chrysalis on a green leaf, and on a door which was painted green (specimen shown). There are also before you green specimens of *Pieris Brassicæ* which were under a vine on the side of a house which was of a stone-colour, with many others taken from the adjoining side of the same house, where there was no vine to affect their colour, but only the somewhat dirty stone-coloured surface; I particularly noticed that there were no green specimens to be seen on this side, although their number was very considerable, and they were attached at various heights, some very near the ground, and others at the house-top under the projecting eaves. Some of the darkest specimens shown on blackened surfaces were exposed

to a very subdued light in a dark corner, and the detached ones so strongly suffused with black were taken from a tarred fence. One of the chrysalides of *Pieris Brassicæ* on a white surface, now exhibited, is almost an albino. I also exhibit green, reddish and dusky chrysalides on surfaces of similar tints. Specimens kept in the dark would be interesting; I have one of *P. Brassicæ* which was placed on whitish wadding in a box from which light was excluded, and it is of a light colour, although possessing all the specific markings, but from this solitary example no conclusion can be drawn. Mr. A. G. Butler has informed me that he also has made some experiments with chrysalides of *Pieris Rapæ*, and has procured a reddish tinge by means of a red surface, besides other colours. The gilded chrysalides deserve mention here; those of *Vanessa Urticæ* I have hardly ever found except when concealed by nettle-leaves; those on fences, walls, tree-trunks, &c., being of similar colours to those objects, and mottled more or less. The fine chrysalis of *Vanessa Polychloros*, when amongst foliage, is coloured like a withered elm-leaf; I have not unfrequently found it of a light reddish brown, with a cluster of metallic silver (not golden) spots on the back at the juncture of the thorax with the abdomen: this colouring also gives place to mottled grayish when the individual is on a wall or other object. The metallic appearance is probably of service in giving the insects an uneatable look, and is not necessarily connected with the possession of *Ichneumon* in their interiors, as one or two of my entomological friends think, for I have had very fine butterflies out of very metallic chrysalides; indeed I consider this to be the normal colouring, it being the most beautiful by far. I would venture to suggest another reason why the gilding, when amongst leaves, is of service in the way alluded to: it is this—that the *Vanessa* chrysalis is quite loosely attached, hanging only by the tail, so that, even if it could assume the green colour by which it is surrounded, it would be rather dangerous to it than otherwise, for it would then appear to birds very much like a green caterpillar swinging in the air, but as it is it looks more like a piece of gold or brass than anything else, and birds probably do not think of touching it. There are doubtless many instances of the absence of variability in chrysalides, but I think they will all be found to



be mimics of some disliked or dangerous insect. The chrysalis of *Aporia Cratægi* is very conspicuous and not very variable, but I have been much struck by its strong resemblance to the caterpillar of the currant-bush moth (*Abraxas grossulariata*), as both are speckled with black on a whitish ground, and the moth caterpillar is extremely abundant in the same localities, and is probably disliked by birds. The pupa of the moth is very remarkably coloured with yellow bands on black, giving it a waspy appearance, and I recollect being afraid when a child to touch it, thinking it would sting. I feel convinced that by the proper use of gilded surfaces the gilded chrysalides of *Vanessa*, and perhaps of other genera, would be obtained, and I hope to be able to try the experiment next season; also to obtain colours with coloured glass, as it is probable that the strongest effects would be obtained by that means. There can be no doubt that disguise will be found to be carried to as great a length in chrysalides of butterflies as in any other class or stage of insect life, as their evading observation, and consequent security during a considerable portion of their lives, must depend *solely* upon this power which they unconsciously possess."

Mr. A. G. Butler stated that he had obtained a red or rosy chrysalis of *Pieris Rapæ*, which had undergone its transformation in a piece of scarlet cloth; and pupæ upon glass were generally of a pale slate-colour.

Mr. J. Jenner Weir said that, whatever might be the explanation, he could speak to the fact that metallic chrysalides were for some reason or other obnoxious to birds and free from their attacks.

Mr. Bond combated Mr. Wood's theory; he had had thousands of pupæ of *Papilio Machaon*, and had often had the brown variety of pupa on a green ground-colour, whilst in some seasons he obtained no brown specimens at all: as regards *Pieris Rapæ*, he had noticed that the pupæ of the second brood were generally rather paler than the first brood; but in the same greenhouse, the doors and wood-work of which were painted white, he had found chrysalides of all the exhibited colours, many of them quite as dark as those shown by Mr. Wood on black surfaces; on the same wall, built of particularly red bricks, he had found all the colours except the red; on the same twig of the common garden

rocket, subject to precisely the same external influences, he had often noticed three or four pupæ of *Anthocharis Cardamines*, and at times the same twig would produce red, green and white varieties, while at other times all the pupæ were of the same colour.

*January 6, 1868.*— Sir John Lubbock, Bart., President, in the chair.

Mr. F. Smith exhibited two specimens of a *Polistes* captured at Penzance by a lady residing in that town; one specimen was caught in the summer of 1866 on the window-sill of a house, and three more were taken at the end of July or beginning of August, 1867, in the very same situation in the window of the same house. The insect did not agree exactly with any described species of *Polistes*, but appeared to be intermediate between the North-American *P. biguttatus* and the Brazilian *P. versicolor*. The captor suggested that they had probably been introduced in wood from a dock-yard situate about a hundred yards from her house; but Mr. Smith could scarcely believe that they were imported: the species of *Polistes* were not wood-boring wasps, but paper-makers, and their slight nests were attached to the outside of a tree, post, wall, &c.; untrimmed wood was not imported from America. (See the 'Entomologist's Annual' for 1868, pp. 87, 96).

Mr. Bates also had difficulty in believing that an insect with the habits of *Polistes* could have been imported; the nests were mere strings of cells hanging by a peduncle from the rafter of a house, a shrub, the trunk or branch of a tree; they were of loose construction, incapable of withstanding exposure. Such a nest could hardly be transported in safety, either with timber on board ship or washed across by the gulf-stream. Such was the rapidity of life in Brazil, and so quick the succession of broods, that the eggs would not remain unhatched during the voyage, and if hatched the young larvæ must perish. Nor did he think it likely that perfect wasps would be brought over alive; at any rate the specimens would be worn, and very different from those exhibited.

Mr. M'Lachlan exhibited a Trichopterous insect new to Britain, *Neuronia clathrata* of Kolenati, captured at Bishop's Wood, Staffordshire, by Mr. Chappell, of Manchester.

*Entomological Notes, Captures, &c.*

*Bombyx Yama-Mai*.—In the October number (Entom. iii. 333) is recorded the first successful attempt in this country to rear the Japanese oak-feeding silkworm, *Bombyx Yama-Mai*, so as to produce fertile eggs: the credit of this success is due to Mr. Gascoyne, of Newark, and we trust that his example will be freely imitated by other entomologists. The silk crop again this year is a complete failure, and it becomes necessary to devote more and more attention to the other races of silkworm, that the deficiency in the produce of the mulberry worm may be supplied from other sources. Some of the best silk produced by other than the mulberry worms is obtained from oak-feeders, *viz.*, *B. Yama-Mai*, from Japan, and *B. Lernyi*, from N. China. An attempt was made last winter to introduce this species into England, and a large number of cocoons were, by command of the Foreign Office, sent to England; but whether from injuries occurring in the long transit, or from want of experience on the part of those to whose charge they were entrusted, the experiment failed. Nevertheless it ought to be repeated: errors of treatment are by experience pointed out and avoided, a better acquaintance with the habits of the insect is brought to bear upon its culture, and, if the experiment can be persevered in, we have Dr. Wallace's authority (who was entrusted with a few of the cocoons) for believing that success would eventually crown the attempt; indeed success was very nearly attained: about one dozen cocoons were reared, but from these no eggs were obtained to perpetuate the race. If any of my readers can help me in securing cocoons of this species, with a view to breeding it in Great Britain, they will greatly assist in the solution of a difficult problem. With regard to the *Yama-Mai*, we have been promised a paper by Dr. Wallace on his experience in its culture in 1867, and I am glad to see from his advertisement that he has secured a consignment of eggs of this species from Japan, for the use of experimenters. I confess I rather doubt the success of sericulture in this country, and with our fickle climate; yet I hope that he and others may be able in 1868 to chronicle, in the pages of the 'Entomologist,' as Mr. Gascoyne has

done for 1867, a successful result so far as obtaining the perfect insects.—*Edward Newman.*

*Galls upon Oak-leaves taken as Food by the Pheasant.*— I enclose some galls, as specimens from a considerable number taken from the crop of a pheasant which was recently shot in Herefordsnire. I received them from a friend, with this memorandum :—“ These seeds were taken from the crop of a cock pheasant, fat and well-flavoured. I can't tell what they are, and so ask you.” They are evidently the little spherical hairy gall found often in clusters upon the back of oak-leaves in coppices, resulting from the deposit of eggs by one of the Cynipidæ. This particular species is not so abundant as the flat disks called “ oak-spangles,” once thought to be Fungi, nor so crowded in its growth. I do not remember that either has ever been noticed as taken by birds for food.—*Edwin Lees ; Worcester, January 15, 1868.*

[Mr. Armistead, to whom I transmitted this curious fact, has sent the following note thereon.—*Edward Newman.*]— “ The galls taken from the crop of a pheasant are undoubtedly what are popularly called ‘ button galls.’ They are met with on the under surface of the oak-leaf, and are produced by the small fly, *Neurobius Reaumurii*. They are not unfrequent in some seasons, though not so common as those pretty little rosy cushions, of fungus-like appearance, also found under the oak-leaf. The latter, known as ‘ oak-spangles,’ are the production of *Cynips longipennis*. Both these galls remain on the leaves till they fall in the autumn. I have been rather glad to receive these specimens from the locality stated. Being found in a pheasant's crop they must have been picked up by it as grain, for food. A fact here discloses itself for consideration, and that is, Do birds habitually pick up these for food, and, if they do, do they derive any nutriment from them ? The solution of this may afford an additional answer to those we are already in possession of, as to the *cui bono* of these and a host of other similar productions, of which, though daily before many of our eyes, we still know comparatively so little ; yet are they not only replete with wonder, containing indubitable proofs of infinite skill and workmanship, but all have undoubtedly some use, did we but know it. We are already aware, though we almost need to be reminded of it sometimes, that

for the ink which flows from the pen to record our every thought or discovery we are indebted to one of the structures popularly known as galls; and several others there are for which our merchantmen ransack China and Japan, India and Africa, that are now variously used in commerce. Some, on the other hand, are so tempting, in appearance at least, that, though they are never likely to usurp the place of more wholesome and palatable fruit, are nevertheless, as it appears, eaten with avidity by those who find nothing better within their reach. In the 'Fifth Report on the Noxious and other Insects of the State of New York,' Dr. Fitch, in speaking of one of the American galls, observes that "their luscious aspect excites the children in many neighbourhoods all over the country to gather and eat them. A school-teacher who was employed in Michigan, in a school-house which was surrounded with shrub-oaks which were loaded with these galls, informs me that for many days the pupils at every recess were filling their pockets with them, and eating them almost incessantly, yet without ill effects therefrom in any instance." But to return to these button galls from the pheasant's crop, it would be well worth while, for those who are in a position to do so, to make such observations as shall determine the cause of their being deposited there, for it is only by an accumulation of facts that we can establish anything with certainty. These galls were found in the crop of a pheasant: the question that arises next is, Are they found in the crops of other birds? — then follows the question, Do birds pick up these galls as food, and, if they do, do they yield them any nutriment? These are interesting and important points for investigation, and, if pursued, will lead to similar inquiries respecting other galls, and not only in reference to their alimentary uses, but in many various ways. Nearly all their peculiar properties have yet to be ascertained. And if the blue gall of commerce imparts so inimitable a black dye, why may not the hundreds of other galls produce, under proper chemical manipulation, kindred dyes, which, for anything we know, may far exceed all the beauty of the aneline lines, and it is possible, as they easily may, much exceed them in permanency. Here is a wide and unexplored field for observation and experiment. Let your readers, some of them, take the hint. Let them test the properties

and examine into the uses of these hitherto neglected, almost unnoticed and unaccountable, vegetable excrescences known as galls, and who can calculate the result!—*W. Armistead ; Virginia House, Leeds, January 21, 1868.*”]

*Second Brood of Pyrameis Cardui.*—Myself and a friend collected a considerable number of larvæ of this species from the 1st to the 22nd of September last, which fed up well in ten days from the time they were taken, and changed to pupæ and imagos in four weeks. I had about four cripples and several dozen perfect specimens. I noticed that although the weather had set in cold before every one had emerged, a little artificial heat brought them forward in a few days. Several of them I left in the cage for two weeks, to watch them at intervals: as soon as they were brought near any heat and light they were very lively. The larvæ were unusually abundant last year. I found them feeding on four species of plant.—*James Bryant ; 63, Old Broad Street, January 9, 1868.*

*Note on Acidalia interjectaria.*—This species occurs tolerably abundantly at Folkestone. M. Guenée informs me that in *A. osseata* the costa is always “rouge,” which I take it is about the colour of a penny postage-stamp, or at the least of burnt clay. I have certainly never met with British examples of so-called *osseata* possessing this peculiarity. My friend Mr. Bond has a series of specimens, taken years ago in Cambridgeshire, which present certain differences from the Folkestone individuals, and also from the types of *A. interjectaria* kindly sent to me by Mr. Brown, of Cambridge; but though they might be described as fuscous or even fawn-coloured on the costa, one could not very well call them “rouge.” No doubt the extremes of these two forms are distinct enough, but it is a confessedly difficult job to draw a line between them; for M. Guenée, in his great work, endorses M. Delaharpe’s opinion that one begins where the other leaves off.—*H. G. Knaggs ; Kentish Town, October 9, 1867.—Ent. Mo. Mag.*

*Acidalia osseata.*—I have recently received from Dr. Staudinger several specimens of the true *Acidalia osseata*. I had not seen a continental specimen before. The typical examples have a bright red costa, and I have never seen any British specimens like them; but I possess five or six which

appear to be identical with a pale variety, also sent to me by Dr. Staudinger. There is, however, no doubt that the majority of specimens in our cabinets under the name of *osseata* are really *interjectaria*. Haworth's description of the former species applies to the latter. — *Henry Doubleday; Epping, January 15, 1868.*

*Argyrolepia Mussehlina.* — I have no recollection of the Tortrix which the Rev. H. Burney says I named *Argyrolepia Mussehlina*. The late Richard Weaver took a few specimens of a Tortrix which were certainly identical with those which were given to me by the late M. Becker under this name: they were totally different from the *griseana*, *Haw.* = *udana*, *Gn.*, and Dr. Staudinger puts more than fifty species between them in his Catalogue.—*Id.*

*Larva of Notodonta trilophus.* — The larva of this insect, as near as I can give it, is dark green, with a reddish streak along the back and one along the sides, with three prominences on the 5th, 6th and 7th segments, and a smaller one on the 12th segment. As to breeding from it, I think where there is one insect there is sure to be some more; though we cannot find them, they are sure to find one another.—*T. Last; Borough Road, Ipswich, January 13, 1868.*

[There is a very exact figure of the larva of *N. trilophus*, as well as those of *N. cucullina* and *N. bicolor*, in my 'British Moths,' No. 13. I thought they might be useful to entomologists.—*E. Newman.*]

*Does Frost kill Larvæ?* — In a paper addressed to the Academy of Sciences by M. Reiset it is distinctly stated that the general belief held by agriculturists, *viz.*, that severe frost kills noxious insects and larvæ that grub in the earth, is a fallacy. This proposition led to discussion amongst the members of the learned body. M. Emile Blanchard, after doing justice to M. Reiset's important researches, said that it would be wrong to suppose that naturalists had hitherto lived in ignorance of the habits of larvæ feeding on roots, and that it was a well-known fact that, while the temperature continued mild, they remained near the surface, and on the contrary descended to greater depths as the cold became more intense, so as always to escape the effects of frost. The idea, therefore, that a severe winter would rid agriculture of its greatest enemies was utterly without foundation. M.

Chevreur said that M. Reiset had no intention of passing himself off as the discoverer of the fact alluded to, but had done Science a great service by instituting precise experiments for the purpose of ascertaining at what depths, according to the temperature, larvæ would be found in the soil, and this had not been done before. These experiment had been carried on for upwards of a year, and M. Reiset had ascertained that, while the thermometer stood at 15 degrees below freezing-point in the air, the temperature of the soil at a depth of fifty centimetres did not fall below zero; this happened, however, on an occasion when the ground was entirely covered with snow. After these important experiments M. Reiset had told agriculturists that they were utterly mistaken if they trusted to frost for the preservation of their crops from insects, and that they must exert themselves if they wished to rid themselves of the impending scourge. In this M. Reiset had done his duty, without raising any pretensions to a discovery. Last autumn M. Reiset, knowing that the white worm was still quite near the surface, caused a field to be slightly ploughed and harrowed; two women followed the harrow with baskets, and collected 344 kilog. of white worms, at a cost of 12 fr. per hectare ( $2\frac{1}{2}$  acres). This field produced an excellent crop, while that next to it, which had been let alone, produced nothing.—*Galignani*.

*Captures near Huddersfield.*—The following is a list of my principal lepidopterous captures since the beginning of July last. Those for which Sherwood Forest is given as the locality were taken about the third week in September, when I spent a few days in that famous neighbourhood for insects.

*Hepialus sylvinus.* This species appears to occur periodically here: this season it has been abundant throughout the neighbourhood; last year, although I searched well for it, I failed to secure a single specimen.

*Nudaria mundana.* Very common about old walls at Grimescar.

*Liparis Salicis.* Bred a fair number. I have never taken this species here.

*Orgyia pudibunda.* In the larva state, Sherwood Forest.

*O. gonostigma.* About a dozen larvæ, beaten from oak and birch in Sherwood Forest.

*O. antiqua.* Cocoons spun up on oak, Sherwood Forest.



*Bombyx Quercus*. Bred some fine specimens; larvæ received from the south.

*Metrocampa margaritata*. Pretty common at Grimescar.

*Crocallis elinguaris*. Only one specimen, Bath Buildings.

*Amphydasis betularia*. Larvæ by beating birch, Sherwood Forest.

*Hybernia aurantiaria*. Bred.

*Eupithecia nanata* and *E. minutata*. Larvæ of both abundant, by sweeping the heather in Sherwood Forest.

*E. assimilata*. Larvæ pretty common on hop, but not so abundant as usual, Clare Hill.

*Thera obeliscata*. A single specimen at ragwort-bloom, Sherwood Forest.

*Scotosia dubitata*. At Grimescar.

*Cidaria russata*. At Grimescar.

*C. testata*. Abundant on the heath, Crosland Moor.

*C. populata*. At Grimescar, not common.

*Chesias spartiata*. Bred from larvæ received from Southsea.

*Pygæra bucephala*. Larvæ abundant, Sherwood Forest.

*Notodonta camelina*. Larvæ beaten from birch in Sherwood Forest, rather common.

*Cymatophora diluta*. At sugar in Sherwood Forest.

*Acronycta Psi*. Larvæ common at Clare Hill.

*A. leporina*. A single larva beaten from birch in Sherwood Forest.

*Miana arcuosa*. Very common at Grimescar.

*Triphæna fimbria*. Bred.

*Noctua glareosa*. At sugar and ragwort-bloom, Sherwood Forest.

*Cerastis Vaccinii*. Very common at sugar, Sherwood Forest.

*Xanthia cerago*. New North Road.

*Euperia fulvago*. About a dozen specimens at sugar in Sherwood Forest.

*Dianthœcia capsophila*. Bred from pupæ received from Ireland.

*Dasypolia Templi*. In old stone-quarries: scarce this season.

*Epunda viminalis*. Bred from larvæ beaten off willow at Woodsome.

*Miselia Oxyacanthæ*. At sugar in Sherwood Forest.

*Agriopsis Aprilina*. At sugar; I also found the pupæ very common at roots of oak in Sherwood Forest.

*Hadena protea*. Very common at sugar in Sherwood Forest.

*Abrostola triplasia*. Larvæ common on hop, Clare Hill.

*Plusia Iota*. At Grimescar; scarce this season.

*Amphipyra pyramidea*. Very common at sugar in Sherwood Forest, but mostly worn specimens.

*A. Tragopogonis*. At sugar, Clare Hill.

*Odontia dentalis*. Bred a good number from cocoons received from St. Leonard's-on-Sea.—*Geo. T. Porritt; Clare Hill, Huddersfield.*

*Stealing Insects*. — A short time ago a collector in Germany, who had a fine collection of beetles, prided himself on possessing a couple of Goliath beetles of great value. One day, to his dismay, he found one of the beetles had disappeared out of the drawer; he made out a list of the persons collecting such objects who had lately inspected his collection, and then set out to visit their collections. He called on No. 1 and No. 2 without any result, and, looking through the cabinet of No. 3, there was a Goliath of the kind he missed. He said, "So you have got that species at last?" "Yes," said the collector No. 3, "I had to pay a large price for it." "Pray let me have it in my hand, and examine it more closely." "Oh, certainly," said the collector No. 3. As soon as he had got it fairly in his hand he broke the specimen in half, that is, between the body and thorax, and, holding the broken ends up to the collector, showed him a label, gummed on the inside of the body, on which was written, "Stolen from Mr. R." Foreseeing such an event might happen, he had placed a label in the body of each of his specimens. It is to be wished that this could be done in other cases.—*Athenæum*.

'*Entomologist's Year-Book*.' — This little work will be presented to those subscribers to the 'Entomologist' whose prepayment has reached my hand before the 28th of February. On and after the 28th of February the price will be sevenpence to all purchasers. Those gentlemen who have already prepaid for the 'Year-Book' will please inform me whether they prefer to have two copies (the one purchased, the other given), or a single copy and the stamps returned.—*E. N.*

# THE ENTOMOLOGIST.

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## *Proceedings of the Entomological Society of London.*

January 28, 1868. — *Anniversary Meeting.* — Sir John Lubbock, Bart., President, in the chair.

The Secretary read the Report of Council and Auditors, after which

The President delivered an Address on the Entomological Literature of Europe during the past year, observing that the labours of entomologists have been neither less earnest nor less successful during the past year than in those which have preceded it, and he thought we might fairly congratulate ourselves both on the number and the value of the communications read before our own Society, the power of publishing which was mainly due to the great liberality of the excellent Secretary, Mr. Dunning. He did not dwell on the memoirs read before the Society, or on the numerous entomological contributions which have appeared in the 'Zoologist,' 'Entomologist,' the 'Entomologist's Monthly Magazine,' or Mr. Stainton's 'Annual,' because they were in the hands of all the members, but proceeded to notice the labours of our friends on the Continent of Europe.

*Sounds produced by Insects.* — Dr. H. LANDOIS has published, in the 'Zeitschrift für Wissenschaftlichen Zoologie,' a very interesting memoir on the sounds produced by insects. He commences with a short historical sketch of the subject, referring especially to the observations of Aristotle, and then describes successively the mechanism by means of which sound is produced among the Orthoptera, Coleoptera, Diptera, Homoptera, Lepidoptera, Hymenoptera and Neuroptera. The number of insects which emit audible sounds is very large, and there can be no doubt that many more produce tones which, though inaudible to us, are perceptible to one another. This is shown by the fact that many species which are apparently silent possess arrangements evidently

intended for the production of sound. The familiar sounds of the Orthoptera have no claim to be regarded as a voice, but are produced by rubbing one part of the body against another. A few, but very few, of the Lepidoptera emit sounds, which are made by rubbing the palpi against the trunk, and cease if the palpi are removed. Among the Coleoptera also sounds are generally produced by friction, and the wings often produce a humming noise during flight. In the genus *Melolontha* there is a second source of sound, which may almost be called a voice. In the large trachea, immediately behind each spiracle, is a chitinous process or tongue, which is thrown into vibration by the air during respiration, and thus produces a humming noise. Similar structures occur in many Diptera, Hymenoptera, Neuroptera and Homoptera, and to them, even more than to the vibrations of the wings, the characteristic sounds produced by so many of these insects are ascribable. The "song" of the Cicada, for instance, is thus produced by the metathoracic ganglia. In the Diptera and Libellulina it is by the four thoracic spiracles that the sounds are produced, while in Hymenoptera, as for instance in *Bombus*, the abdominal spiracles are also musical. The sounds produced by the wings are constant in each species, excepting where there are (as in *Bombus*) individuals of very different sizes. In these the larger specimens give generally a higher note. Thus the male of *Bombus terrestris* hums in  $\Lambda'$ , while the large female is a whole octave higher. There are, however, small species which give a deeper note than larger ones, on account of the wing-vibrations not being of the same number in a given time. Moreover, a tired insect produces a somewhat different note from one that is fresh, on account of the vibrations being slower. Indeed, from the note produced we can calculate the rapidity of the vibration. Thus the house-fly, which produces the sound of F, vibrates its wings 21,120 times in a minute, and the bee, which makes the sound of  $\Lambda'$ , as many as 26,400 times, or 440 times in a second. On the contrary a tired bee hums on E', and therefore vibrates its wings only 330 times in a second. This difference is probably involuntary, but the change of "tone" is evidently under the command of the will, and thus offers another point of similarity to a true "voice." Thus a bee in

the pursuit of honey hums continually and contentedly on A', but if it is excited or angry it produces a very different note. Thus, then, the sounds of insects do not merely serve to bring the sexes together; they are not merely "love-songs," but also serve, like any true language, to express the feelings. Dr. Landois describes the muscles by means of which the form of the organ is altered, and the tone thus, no doubt voluntarily, affected. We can indeed only in a few cases, distinguish the differences thus produced; but as even we, far advanced as we are in organization, habits and sentiments, from a fly or a bee, can yet feel the difference between a contented hum and an angry buzz, it is highly improbable that their power of expressing their feelings should stop here. One can scarcely doubt but that they have thus the power of conveying other sentiments and ideas to one another.

*Opening the Spiracles.*—In conjunction with M. THELEN, Dr. H. LANDOIS has also communicated to the *Zeits. f. Wiss. Zool.* another memoir, on the means by which the spiracles, or rather the tracheæ immediately behind the spiracles, are opened or closed. The mechanism consists of four principal parts—the bow, the lever, the band, and the muscle. The contraction of the latter, acting on the lever, causes the band and bow to meet, and thus close the passage. When the muscle relaxes, the natural elasticity of the parts causes them to separate again, and thus leave the tracheal tube open. They describe the details of the apparatus in a considerable number of species.

*Ocelli of Larvæ.*—Dr. H. LANDOIS has also published a memoir on the ocelli of caterpillars. After describing them in detail, he comes to the conclusion that they do not essentially differ from compound eyes, and that if many of them were grouped together they could hardly be distinguished from compound eyes. In each so-called ocellus the cornea is divided into three lenses, corresponding to three nerves, each with a separate terminal enlargement forming the so-called crystalline bodies. Each ocellus therefore might be regarded as in reality composed of three. On the other hand, the three arches of the cornea are so closely connected together that they give the impression of forming a single cornea. The three lenses also are very closely pressed, and

the three nerves unite into one. Under these circumstances Dr. Landois regards the ocelli of caterpillars as a connecting-link between single and compound eyes, and proposes for them the name of 'ocelli compositi.'

*Metamorphoses of Corethra.*—Dr. AUGUST WEISSMANN has published, in the 'Zeitschrift,' a long and interesting memoir on the metamorphoses of *Corethra plumicornis*. The larva of this fly is the beautiful transparent creature, about half an inch in length, which all lovers of Natural History must have watched floating horizontally among the green vegetation of our clear ponds, and ready, in spite of its apparent delicacy and crystalline transparency, to pounce on any little unwary victim which may come within its reach. At each end of the body are two kidney-shaped air-vesicles, which serve partly no doubt for respiration, but partly also as floats. From its extreme transparency this beautiful larva offers a very favourable object for study, and Dr. Weissmann has described the changes which the different organs pass through. The large black eye of the full-grown larva, and which is also that of the imago, does not exist at birth. The eye of the embryo and young larva becomes, as in many Crustacea, only a secondary optical organ. In opposition to the views of M. Lacaze-Duthiers, Dr. Weissmann regards the external sexual organs as appendages, and not as the representatives of segments. The internal sexual organs, as appears to be the case in all insects, are present even at birth. So also are the rudiments of the tracheæ, which however do not contain, and indeed are not in a condition to contain air. It is still more surprising that some even of the muscles of the imago, as for instance the wing-muscles, are distinctly indicated, not indeed by true muscles, but by bands of undifferentiated tissue, which gradually enlarge and acquire the character of true muscle. The gradual formation and enlargement of the different organs is effected by an infolding of the hypodermis or cellular layer of the skin, so that the new organ does not, as in most other cases, lie inside the old one, but is formed by an inverted fold of skin lying inside the body. The new organs also arise in the same manner, the thickening and subsequently the inversion of the skin taking place beneath one of the sensitive hairs. The neurilemma of the nerve proceeding to this hair develops itself

into all the soft parts of the new organ, whether muscle, trachea or tendon. In the formation of pupal air-vesicles, however, a trachea fulfils this function. The external appendages of the imago, such as the wings and legs, are formed, though not of course fully developed, during the larva stage; and Dr. Weissmann refers the position of the antennæ to a muscular act on their part, for which he brings forward strong reasons. From a pupa of this kind to a pro-imago, as it has been called, of *Ephemera* or *Chloeon*, there is but a step, even if so much. In fact the so-called pupa of *Corethra* ought to be called a pro-imago rather than a pupa. Its functions, with one single exception, are in full activity. Though it does not feed, it swims and appears as active and vivacious as the larva. It can see perfectly well, and on the approach of danger darts rapidly to a place of greater security. In *Corethra* the larval segments develop themselves directly into those of the imago, and the appendages of the head into the corresponding organs of the perfect insect. The thoracic appendages are formed during the last stage of the larva, by outgrowths of the hypodermis round a nerve or a trachea, from the cellular envelope of which the cellular tissues in the interior of the organ are formed. The larval muscles in the abdomen are received almost unaltered into the imago. The muscles peculiar to the imago develop themselves, in the last larval state, from indifferent cellular bands, which are present even in the egg. The genital glands date from the embryo, and develop gradually; all the other systems of organs pass directly, with little or no change, into the imago. In *Musca* the thorax and head rise independently from the corresponding parts of the hypodermis of the larva, and the abdomen only through direct alteration of the eight last abdominal segments. The thorax and head develop themselves from "imaginal disks" which have their origin in the embryo. First, after the formation of the pupal barrel-like envelope from the chitin skin of the larva, the imaginal disks develop themselves into the head and thorax. There is a destruction of all the organic systems, which are re-formed at the expense of the fat body. The genital glands are present in the embryo, and develop themselves gradually. The pupa condition is protracted, and the insect is inactive.

*Embryology of Hemiptera.*—M. MECZNIKOW has published, also in the 'Zeitschrift,' a paper on the Embryology of Hemiptera.

*Auditory Organ of Locusta.*—M. HENSEN has published, also in the 'Zeitschrift,' a memoir on the auditory organ of *Locusta*, in which he confirms the description given by Von Siebold. He also endeavours to prove that there is an identity of plan between this organ and the ear of Crustacea, comparing the auditory rods of the former with the hairs of the latter. He admits that the rods have at their apex a large cell, of which the hairs show no trace; but he argues that the rods of *Locusta* are primary structures, while the auditory hairs of Crustacea have never been examined until after several changes of skin; and he thinks that if the auditory hairs were examined before the first moult, corresponding cells might probably be found at their apex. In any case he does not think that the mere presence of these cells is sufficient to destroy the analogy. He concludes therefore that these auditory rods, like the auditory hairs of Crustacea, are thrown into vibration, when they are fitted, by their form and elasticity, to vibrate in a period corresponding to the exciting sound.

*Development of Simulia, Miaster, Corixa and Aphis.*—M. E. MECZNIKOW, also in the 'Zeitschrift,' describes the development of these four genera.

*Colour of Insects dependent on external condition.*—Dr. MÖLLER has published a memoir on the influence exercised upon insects by external conditions. One of the most interesting parts is that in which he gives cases where the colour of a species depends on that of its habitat. Thus, for instance, *Elaphrus riparius*, he says, in sandy districts, is of a clear brown colour; in meadow lands, on the contrary, green. Again, the larva of *Amphidasys betularia* is yellowish green when it lives on the birch; ashy gray when on the oak; yellowish brown when on the elm; yellowish green clouded with rust-colour when on willows or poplars. He also gives a list of the species which he has observed in ants' nests.

*Sexual Organs in Lepidoptera.*—Dr. E. BESSELS has a memoir, also in the 'Zeitschrift,' on the development of the sexual organs in Lepidoptera.

*Parthenogenesis in Bees.*—Dr. H. LANDOIS, in a short



paper on the development of the sexes in insects, also combats the views of Dzierzon as to the parthenogenesis of bees. He maintains that the sex of the bee depends on the character not of the egg, but of the nourishment. In support of this he asserts that he has removed eggs from drone-cells and placed them in those of workers, and that invariably the grubs hatched from them have produced, not drones, but ordinary workers. He also refers to the well-known possibility of developing young worker-larvæ into queens, which, however, I need hardly observe is not a case of change of sex; and also the difficulty presented by the cross between the common and the Italian bee. When, however, Dr. Landois observes that the females of insects require a longer time for their development than the males, on account of their more complete development, he forgets that in the hive bee the queen comes to maturity in sixteen days, while the workers require twenty-one, and the drones twenty-four. Of course, if Dr. Landois were correct in his statement that the sex of an insect depends upon its nourishment, it follows that it must be undetermined even until some time after the hatching of the egg. No one indeed has yet ascertained that, in the case of the bee, the sex is determined in the embryo, but from analogy it is most probable that this is the case.

*Blind Coleoptera.*—M. LESPES, in the ‘Comptes Rendus,’ has a memoir on blind Coleoptera. He has examined the nervous system of *Aphæuops Leschenaultii*, of *Adelops pyrenæus* and *Pholenon Querilhaci*, of *Claviger Duvalii*, and of *Langelandia anophthalma*. He finds not only the optic nerve has disappeared, but also that the brain itself is profoundly altered, for as he expresses it, “Les ganglions cérébroïdes, au lieu de former une sorte de masse transversalement disposée dans la tête, ont la forme de deux corps ovales allongés placés presque parallèlement.”

*Palæozoic Insects.*—In the ‘Geological Magazine’ for September last is a short but interesting paper by Mr. DAWSON on palæozoic insects. The first belongs to the carboniferous period. Insects representing the orders Neuroptera, Orthoptera and Coleoptera were long ago observed in the coal-fields of England and Westphalia. Until last year, however, though the coal-beds of Nova Scotia are rich in

vegetable remains, no remains of insects had been observed in them. The species now described by Mr. Scudder, under the name of *Haplophlebium Barnesii*, after its finder, is referred to the Ephemera, and must have measured no less than seven inches across the wings. "We can easily understand," says Mr. Dawson, "that the swamps and creeks of carboniferous Acadia, with its probably mild and equable climate, must have been especially favourable to such creatures, and we can imagine the larvæ of these gigantic Ephemeras swarming on the deep black mud of the ponds in these swamps, and furnishing a great part of the food of the fishes inhabiting them, while the perfect insects, emerging from the waters to enjoy their brief space of aërial life, would flit in millions over the quiet pools and through the dense thickets of the coal-swamps." Mr. Scudder describes four insects from the Devonian shales of New Brunswick, under the names of *Platephemera antiqua*, *Homothetus fossilis*, *Lithentomum Hartii*, and *Xenoneura antiquorum*. These are the oldest insects yet known to us, but Mr. Scudder is satisfied, from the plants with which they are associated, that there can be no doubt of their belonging to the Devonian period. They are all Neuropterous, and allied to the Ephemera. In the opinion of Mr. Scudder, however, they show a "remarkable union of characters now found in distinct orders of insects," and he lays special stress on the presence in *Xenoneura* of a stridulating or musical apparatus, much like that of the cricket. In addition to the interest of finding such an organ among the Neuroptera, this observation brings before our imagination, as Mr. Scudder says, "the thrill and hum of insect-life that enlivened the solitudes of these strange old forests."

*Male of Psyche Helix*.—*Psyche Helix* is well known to all entomologists as being one of those interesting species of which the males long remained unknown. From the time of Réaumur, naturalists have sought for it in vain. Von Siebold especially examined a hundred and fifty specimens, which all proved to be females. Latterly, indeed, one or two entomologists have described insects which they supposed to be the males of *P. Helix*, but there has always been a certain amount of doubt about it. Prof. CLAUSS appears to have been more fortunate. The larval case of the male (*Zeits. f. Wiss.*

Zool. vol. xvii. p. 470) is smaller than that of the female, and somewhat different in form. The larva itself is very similar in the two sexes, while, on the contrary, the pupæ differ considerably. Prof. Clauss gives a description and figure of the male, and whatever doubt may attach to the supposed discovery of this sex by other observers, we may now, I think, congratulate ourselves that the male of this curious species has been at last discovered.

*Egg of an Ephemera.*—M. F. RATZEL, also in the 'Zeitschrift,' publishes a short paper on the egg of an Ephemera. He describes and figures two curious hemispherical appendages which are attached to their flat sides, one to each end of the egg. Leuckart, in his celebrated memoir, "Ueber die Micropyle und den feineren Bau der Schalenhaut bei den Insecteneiern," had already observed a somewhat similar appendage to the eggs of the Ephemeræ examined by him, as indeed Swammerdam had also done long before; but he considered it to be a mass of spermatozoa, one end of which was engaged in the micropyle opening. M. Ratzel has, however, observed the formation of the appendages in the ovary, which proves that they belong to the egg itself. The eggs examined by M. Ratzel have another curious peculiarity. A number of fibrous cords, each ending in a circular disk, are attached to the egg along two zones, which divide it into three subequal parts. He suggests that the object of these curious structures is to prevent the eggs from being carried away by the current.

*Leaf-Insect of the Maple.*—The 'Comptes Rendus' for June last contain an interesting paper by MM. BALBIANI and SIGNORET, on *Periphyllus testudinatus*. This insect, known here as the leaf-insect or brown Aphis of the maple, was discovered by Mr. Thornton in 1852, and described under the name of *Phyllophorus testudinatus*. In 1858 Mr. Lane Clark changed the generic name to *Chelymorpha*, *Phyllophorus* having been already used. *Chelymorpha*, however, is in the same position, and M. Van der Hoeven therefore replaced it by *Periphyllus*. The insect is a minute form of Aphis, about one twenty-fifth of an inch in length, flat, and brown. It is characterised by "the extraordinary development and unusual appearance of the tegumentary system. Thus their surface is no longer furnished only with

simple hairs, but also and principally with scaly transparent lamellæ, more or less rounded or oblong, and traversed by divergent and ramified nervures. These lamellæ occupy especially the anterior margin of the head, the first joint of the antennæ (which is very stout and protuberant), the outer edge of the tibiæ of the two anterior pairs of legs, and the lateral and posterior margins of the abdomen. Moreover the whole dorsal surface of the latter and of the last thoracic segment is covered with a design having the aspect of a mosaic, composed of hexagonal compartments, and which is not without analogy to the pattern formed by the scaly plates of the carapace of tortoises." . . . . "Another remarkable character of these abnormal individuals of *Aphis Aceris* is the rudimentary state of their generative apparatus. This is reduced to a few groups of small, pale, and scarcely visible cells, none of which arrives at maturity to become transformed into an embryo; and it retains this character as long as it is possible to observe the animal. The functions of nutrition, also, are performed in them in a very unenergetic manner; for from the moment of their birth until that at which we cease to observe them, they increase but little in size, attaining scarcely 1 millimètre. They undergo no change of skin, never acquire wings like the reproductive individuals, and their antennæ always retain the five joints which they present in all young Aphides before the first moult. Nevertheless they possess a well-developed rostrum and an intestinal canal, the peristaltic contractions of which we have distinctly observed." This curious *Aphis* turns out to be, not, as was at first supposed, the larva of a new species, but a special form of the well-known *Aphis Aceris*. MM. Balbiani and Signoret consider that they have placed this remarkable fact beyond the possibility of doubt. The question naturally arose, What was the signification "of these abnormal individuals of the *Aphis* of the maple, and what part did they fulfil in the reproductive functions of the species to which they belong? They are evidently not males, since their generative apparatus retains the same rudimentary form at whatever epoch we examine them. Moreover, in no known species of *Aphis* are the males produced at the same time as the viviparous individuals, which are not the true females of the species. There is therefore no other alternative

but to regard them as a modification of the specific type constantly reproduced, with the same characters, by the successive normal generations." This, I confess, seems to me no satisfactory explanation of the constant production in a species of a form, very abnormal in appearance, which does not reproduce itself, which scarcely grows at all, is almost stationary, and, after living for several months, dies with the leaf on which it was born. This curious instance of Dimorphism seems to offer a very promising field for further study, and I would specially recommend it to the attention of the Members of our Society.

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*Entomological Notes, Captures, &c.*

*Captures near Gloucester in 1867.—*

C. Edusa. Scarce this year.

M. Artemis, A. Galathea, T. Rubi.

L. Alsus. Dursley and Painswick.

L. Arion. I mention this species again to correct a misprint in the 'Annual,' which makes me capture it on the 29th of July: it should be June, the usual flight of the insect being from the 15th to the 25th of June.

S. ocellatus. I had several larvæ brought me, feeding on apple.

M. stellatarum. Only saw one this season.

S. formicæformis. This insect was seen at Stonebench, but not captured.

P. Geryon. Common on one or two spots of the Cotswolds.

C. Plantaginis. Common.

P. Populi. Larvæ.

E. lanestris, B. neustria. Very common in the larval state.

I. vernaria. One. A scarce insect here.

E. trilinearis. Not uncommon, Cranham Woods.

Æ. luteata. Rather scarce.

A. ornata. Painswick Beacon. Commoner than usual this season.

A. subsericeata. Two, Dursley and Upton.

A. immutaria. One, Upton.

P. petraria. Not uncommon, and widely distributed.

M. Euphorbiata. Common, Grange and Dursley.

- L. marginata*. Frequently met with.  
*L. olivata*. Two or three specimens.  
*E. albulata*. Common, Kimberland.  
*E. centaureata*, *E. absynthiata* and *E. assimilata*. At lamps.  
*E. sobrinata*. Cranham Woods.  
*E. rectangulata*. Swarming in some orchards, and not to be met with elsewhere: I took three dozen in less than an hour by blowing the tree-trunks.  
*Y. impluviata*. One, Grange; May.  
*M. rubiginata*. Not common.  
*M. procellata*. Not common, Upton.  
*P. tersata*. Not common, Upton.  
*S. dubitata*. A few at light; August.  
*C. miata*. At light, both before and after hybernation.  
*C. corylata*. One specimen, Kimberland.  
*C. testata*. One specimen, Grange.  
*C. pyraliata* and *C. dotata*. Common, Upton.  
*P. Hamula*. Rare.  
*P. unguicula*. Cranham Woods, scarce; May.  
*P. cassinea*. One bred from larva on oak.  
*T. derasa*. Flying at dusk, Upton; July.  
*B. glandifera*. One at rest in the town.  
*A. Ligustri*. One bred from dug pupa.  
*L. testacea*. Very common at light.  
*A. saucia*. A few, sugar and ivy.  
*O. macilenta*. A few, ivy.  
*A. lunosa*. A few, ivy and sugar.  
*X. ferruginea*. Common, ivy.  
*P. flavocincta*. One at light.  
*X. rhizolitha*. Two at rest; March.  
*X. semibrunnea*. Three, ivy; October.  
*C. Verbasci*. Larvæ not uncommon.  
*P. Ænea*. Common, Painswick Hills.  
*H. tarsipennalis*. Grange; May.  
*E. anguinalis*. Not uncommon on Painswick Beacon.  
*E. octomaculalis*. One or two at Grange. A new species to this district.  
*B. pandalis*. Rather scarce, Cranham; June.  
*B. hyalinalis*. Scarce, Dursley; July.  
*S. hybridalis*. Common.  
*H. Quercana*. A few larvæ, but only bred one specimen.

*A. Baumanniana.* Kimberland; April and May: rather common, though scarcer than usual.—*H. W. Marsden; Brook Street, Gloucester, February 5, 1868.*

*Notes on some doubtful British Coleoptera.*—The following notes, extracted from Barbut and Dillwyn, may perhaps be held to confirm the indigenous origin of some species generally doubted. Mr. Dillwyn also refers, amongst others, the *Psylliodes Hyosciami* as being not rare on the *Hyoscyamus* in the Burrows. It has not been taken for a long period.

*Hispa atra, L.* Stephens figures this insect, and says that he possesses a pair of it; one taken near Rochfort, in Essex; the other from the Marshamian cabinet. Both these are very doubtful, but it appears not to have been noticed by him or others that Barbut, 'Genera Insectorum of Linneus,' published in 1781, also figures this insect (Pl. iv. Gen. 12). He describes it briefly, and adds, "I met with this little insect in the month of July, at the root of long grass, in a field near Paddington. It is rather hard to catch, letting itself fall down on the ground as soon as approached." This notice, I think, renders it certain that one example at least has been taken in England, though very probably it is not really indigenous.

*Cassida ferruginea.* Dillwyn, in his 'Coleopterous Insects of Swansea,' quotes a letter which he received from Dr. Leach, where he says that he possesses the true *C. ferruginea*, taken at Woodlands, Devon, and also from Sweden and Germany. This, I think, is decisive as to the claims of this insect to be considered indigenous.

*Eumolpus pygmæus.* Mr. Dillwyn's account of the capture of this insect is very circumstantial, and is confirmed by the fact that he subsequently got another specimen in the same place.

*Scydmaenus rutilipennis.* Mr. Dillwyn (l. c.) says that in Dr. Leach's MSS. this is said to be a Swansea insect. There is still a specimen in the British Museum, which, however, I have little doubt was sent to Dr. Leach by his correspondent, Herr G. Kunze, of Leipzig.

*Astrapæus Ulmi, F.* Mr. Dillwyn (l. c.) says, "One of the *Brachelytra* taken in the neighbourhood, Dr. Leach said belonged to the genus *Astrapæus, Latr.*"

*Philonthus cyanipennis.* Said by Stephens to be from

Swansea ; Mr. Dillwyn, however, says that he has no recollection of it.—*G. R. Crotch.*

*Plague of Moths.* — In several parts of New South Wales great annoyance has been caused this autumn by immense quantities of moths. The Rev. W. B. Clarke, in a letter to the 'Sydney Morning Herald,' gives an account of the annoyance occasioned to the congregation at St. Thomas's Church, North Shore, last year, and again this year :—"The moths appeared in church this year on the 14th of September, and from that date to this have gone on increasing in numbers, until several bushels have been destroyed, though apparently without much diminishing the army. The state of the church was such on Sunday, October 6th, from the accumulated dust (moth-feathers), and the incessant swarms that were continually flying through the building, that Divine service could not be held therein. More than seven days' hard labour in endeavouring to subdue them had been then spent in vain, and since then applications of the strongest ammonia, sulphur, smoke, and other contrivances, used for hours, have failed to drive them away, for as fast as one swarm is partly destroyed another succeeds. There are so many openings in the building that cannot be closed, and so many lodgments outside, that no smothering contrivance has succeeded ; and as the trees and ground are full of them, the moths, if driven away for a time, muster again and return. This morning I made an attempt to reckon up the numbers grouped together on the windows, and I counted more than 80,000. In the tower and below the floor, and hidden behind the skirting, there are probably many millions. An opinion has been published that these moths came in from the sea. I am told that a vessel yesterday, twenty miles from land, was covered with them. Their first appearance this year was with a west wind. Previous visitations have probably left eggs enough to account for the present multitudes without going a great distance."

[A long and interesting account of this phenomenon appears in this day's 'Zoologist,' forming part of Mr. Dunning's report of a late Meeting of the Entomological Society ; and on several previous occasions I have published, in that Journal, records of phenomena of this kind, under the heading "Bugong Moths."—*Edward Newman.*]



# THE ENTOMOLOGIST.

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APRIL, MDCCCLXVIII.

[PRICE 6D.

*Variation in Lepidoptera.* By Mr. C. S. GREGSON,  
(Continued from vol. iii. page 13).

*Cerura vinula.* Two perfect specimens, measuring only one inch eight lines in expansion of wings.

*Petasia nubeculosa.* One specimen, a fine male, ash-coloured or gray, reminding one of a large *Acronycta Menyanthidis* or *A. Aceris*.

*Notodonta camelina.* This species varies much in size and colour here, from light ochreous yellow to deep rich brown: I possess vernal specimens averaging one inch two lines, whilst the autumnal broods below them average one inch six lines.

*N. dromedarius.* This species is plentiful upon the Lancashire mosses upon birch, in the larval state, in August, but these larvæ invariably produce the variety *subfuscata* of authors, of a deep rich dull brown: I possess a few of the insect, bred from larvæ gathered in Hampshire, which seemed not to differ from our own local larvæ, but which produced a fine, rich, deep red-marked typical *dromedarius*.

*Pygæra bucephala.* Of this constant species I possess one fine male, the dark portion of the wing wanting the silvery gloss peculiar to this species, and curved round the apical blotch both above and below, so as to clasp it, as it were, almost to the apex, giving the blotch a somewhat pointed appearance: this specimen is the only aberration I have ever seen worth naming, though I have repeatedly seen an allied species placed as a variety of it.

*Cymatophora flavicornis.* Of this insect thousands have passed through my hands or under my eye; and though it is not esteemed a very variable species, I have collected about a score for my collection, all of which differ from each other in colour or marking, but to describe the peculiarities of each is not desirable; one has a deep black-brown head, thorax,

abdomen and shoulder-mark, and a distinct light circular discal blotch, in which is an ocellus; another is like it, except that the light blotch is cuneiform; others have large rhomboidal or trapetzoidal costal markings; one is unicolorous ash-coloured, without strigæ or other markings; others, from Perthshire, are rich suffused reddish green; but none of them could be mistaken by an ordinary entomologist for anything but *flavicornis*.

*C. ridens*. This species is much lighter and handsomer in the North of England than the southern specimens, and was at one time supposed to be a distinct species: I possess it from beautiful dark green-brown to pale ash-white, with a dark central band.

*Bryophila* Perla. Suffused with a rich Italian ochreous tint, from Warmton, where all are more or less tinged with this peculiar colour, whilst here they are pale ashy gray.

*B. glandifera*. From pale ashy to dark gray greenish drab.

*Acronycta* Psi. I have one dark smoky female, which I took at Woodford, when there with Mr. J. W. Douglas and Mr. E. Shepherd, in July, 1852.

*A. nobilis*. I possess a series of a dark silky *Rumicis*-like insect, except that it is not like *Rumicis*! which occurs freely on the borders of Yorkshire and South Lancashire. Formerly this insect stood in collections as *A. Salicis* of Curtis; now it stands as a new species? in most of the good northern collections. It differs from *A. Rumicis* in its richer, more silky and darker appearance, and in the colour of the under wings; but until the larva is described it is perhaps as well to let it remain provisionally named as above.

*A. Menyanthidis*. Thousands of this species have been examined by me, and from these, or from *flavicornis*, I have selected a series, none of which are like the others; still there is nothing very striking about any of them, except three or four which have broad dark marginal bands, two or three having the outer segments very dark, and some large females with distinct Psi-like marks, and three or four of the suffused variety *A. Salicis* of Curtis. In all these latter the arrow-head of Psi is very well defined.

*Senta* Ulvæ. A single specimen of this species, given to me by Mr. Bond, has two distinct dark patches on the superior wings.

*Nonagria fulva*. This species varies here from light cinereous-gray or pale drab to rich fulvous reddish brown.

*Gortyna flavago*. One specimen I possess expands only three-fourths of an inch. I have two immense females, the whole of the extra size of which seems to be added outside the central fascia, thus making the outer margin nearly one-fourth of an inch wide, of a rich brown-purple. These fine specimens were bred from the pith of the elder, from which I cut them when just making up: they proved one of my entomological disappointments, as I made sure I had a new species when I saw the tops of the year's shoots drooping from the effects of a larva feeding therein.

*Hydrœcia nictitans*. Upon the wet parts of our mosses, where this species is abundant, it rarely varies, but on our drier heaths it grows larger, but rarely has the stigmata light-coloured; and the specimens vary much, from dirty reddish drab to rich reddish brown, the stigmata being often perceptible as lighter reddish blotches.

*H. micacea*. One fine dark female, the colour of *H. Petasitis* when bred; and one fine female of a rich almost indescribable *Plusia-Iota* colour. This specimen was bred by Jno. Blakley, from the roots of *Petasites vulgaris*. Words cannot convey any idea of its beauty.

*Xylophasia combusta*. In low wet localities this is the prevailing form here, whilst on the dry ground the variety *X. combusta* is rarely seen: I possess it from pale drab to rich dark brown.

*X. polyodon*. One perfect specimen in my collection, expanding one inch two lines, is the smallest specimen I ever saw; it was taken at sugar, and presented to me as a new species. Around our mosses this species is very dark, and in the wet parts of them we get almost black specimens at sugar: I possess it from light drab to almost black-brown.

*Charœas Graminis*. From hundreds of this species, seen stretching their wings on the stems of grasses at the Brushes, I have selected various forms, including the variety *hibernicus*. When this species has fed in damp bottoms it is much finer than when the larvæ have fed on dry hill-sides.

*Luperina testacea*. This varies much in colour, from light drab to dark, but not much in markings: I possess specimens from less than one inch in expansion to one inch four lines.

*Mamestra Brassicæ*. Of this constant and abundant species I dare not say how many I have carefully secured: the results are before me:—One very small perfect specimen; one light albicolon-coloured specimen; one of a smooth rich brown-colour, and without markings, a large specimen; and two large females having full white stigma, and a rich, distinct, wavy, light striga near the outer edge. These are very striking insects: they were both bred and given to me by Mr. Diggles.

*Apamea gemina*. This does not vary so much here as in the South. My best varieties of it were given to me by Mr. Doubleday. One is a very *Genistæ*-like specimen.

*Apamea fibrosa*. Of this variable species I have a short series of four named varieties.

*A. oculea*. As variable as it is abundant. Few care to select the various forms, now that they are well understood: before Mr. Doubleday's 'Synonymic List' appeared we all had this species under no end of names: specimens taken in the Isle of Man last year are more striking than any I have before seen; they are of a deep dull black-brown, with large pale stigmata, giving quite a specific character to them.

*Miana strigilis*. On our sand-hills the variety *æthiops* is the prevailing form: the typical *strigilis* is rarely met with, except inland.

*Celæna Haworthii*. Of this permanent species I possess five good aberrations: one dull deep brown; one light ashy gray; one large, bright red, with the outer margin lighter; and one unicolorous drab on all the wings: these are all I have ever seen worth calling varieties of *C. Haworthii*.

*Grammesia trilinea*. I have two specimens of the variety *bilinea* of authors, and one smoky coloured specimen without lines.

*Caradrina cubicularis*. I have one specimen having a broad dark fascia across the middle of the wing: it was given to me by Mr. Doubleday.

*Agrotis valligera*. This species varies much here; and from the thousands I have taken I have selected a long series, varying in size from less than an inch in expansion to one inch six and a half lines, and in colour from light drab to rich pinky brown, and also to deep rich dull brown.

*A. saucia*. This is a variable species here, but need not be particularized.

*A. Ripæ.* I have plain light specimens from Hampshire, and dark rich well-marked Cumberland examples.

*A. cursoria.* Of this species I have a long series of variations, from dull, irrorated, suffused specimens, without perceptible stigmata, to smooth rich ochreous examples, with white nervures, distinct stigma, and light costal streaks.

*A. fumosa.* I have three specimens, from the light brown form, called *Marshallii*, of the South, to the variety *nigricans* of our moss lands.

*A. Tritici* need not be particularized: it occurs in thousands upon our sand-hills, and often requires a practised eye to determine whether it is *Tritici*, *fumosa* or *cursoria*.

*Triphæna janthina.* The only variety I have seen of this species was bred last year, from a larva taken near Conway: the ordinary orange is straw-coloured.

*T. orbona.* Of this species I have two specimens without the central lunule in the under wings, the colour of the under wings in one of them being light yellow: both are bred specimens.

*Noctua Augur.* Two dark dull brown specimens, and one with long, dark, discal, cuneiform patches, are all the varieties I have been able to obtain of this species.

*Noctua festiva.* This varies much here, and I have availed myself of every opportunity to secure aberrations.

*N. xanthographa* also varies much with us.

*Tæniocampa gothica.* Of this species I have many specimens quite without the characteristic mark between the stigmata; one having a large dark patch on the disk of the upper wings, and one is deep dull brown all over.

*T. instabilis* has had my special attention, and, as its name implies, I found it very instable in its characters.

*T. opima.* Two, with light shoulders and broad dark central bands, are very striking forms.

*T. cruda.* One specimen of a dull gray-drab, and irrorated with dark atoms, from Llangollen, is the only aberration of this species I have ever seen.

We now come to a number of species which vary more or less, such as *congener*, *pistacina*, *lunosa*, the genera *Xanthia* and *Cosmia*, but which need not be particularized, as most entomologists have varieties of them.

*Dianthœcia carpophaga.* I have about sixty specimens,

which vary from pale immaculate buff, without suffused underwing marks of any kind (from Kent), through every shade of buff-brown, ashy gray, to rich-coloured gray-brown, with distinct gray markings (from Wales, Cumberland, Ireland, and Isle of Man). This is the variety *capsophila* of Boisduval.

*Polia Chi*, variety *olivacea* of Haworth. I have several of this form; one, given to me by Mr. Allis, is the darkest green I have seen, the body being dark brown; and one, obtained by purchase at Lees, near Oldham, is dark brown-olive, with the marking very light: this is a most striking instance of change in colour.

*Miselia Oxyacanthæ*. One rayed variety, and a series of dark almost unicolorous specimens: the latter, principally from the South, give piquancy to my series of ordinary northern specimens.

C. S. GREGSON.

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*Life-history of Chauliodus Chærophyllellus.*

By Mr. CHARLES HEALY.

THE large brown blotches on the leaves of the conspicuous umbelliferous plant, *Heracleum Sphondylium*, caused by the feeding larvæ of this species, often arrests our attention during the summer and autumnal months. In order to ascertain the inner or mining life of the larva, it is necessary to examine the plants during the early part of the months of June and August, because at a later period in those months the larvæ vacate their mines and become external feeders. The egg is deposited on the under side of the leaf, and when the little larva is born it makes its way into the interior, mining and feeding on the parenchyma of the leaf. Its "frass," at this juvenile period of the larva's life, would appear to be of a somewhat liquid character, and is, I believe, in most cases, contained within the mine. The larva may often then be noticed laying about in its mine, sometimes in a reclining and at others in a curled-up posture: its body is white; its head pale brown, with a darker brown spot on each side; the mouth reddish brown; and the back of the second segment decorated with a black plate, with a divisional line down its centre; the dorsal vessel is green

and somewhat clouded. As it grows older the larva carefully ejects every particle of "frass" from the interior of its mine. A leaf tenanted by a number of these larvæ (at times one hundred or more may be counted in a single leaf of *Heracleum Sphondylium*), when viewed from its upper surface, has a peculiar speckled appearance, but when the leaf is held up to the light the larvæ are plainly visible in their little mines, each enjoying itself to the top of its bent, either laying at rest or feeding, others, as though imitating the habit of *Bedellia somnulentella* larva, laying half in and half out of their mines. Should the leaf become distasteful to the larva from any cause, it quits its mine and bores into the interior of another and fresher leaf. After ejecting a larva from its mine, I have been amused in watching its futile attempts to burrow into the sheet of paper on which I had placed it, first attempting to bite the paper and then commence pushing and thrusting its head firmly on to the sheet; and after repeated failures seemed to be completely bothered: some would raise themselves almost upright, and twist and turn about in apparently the greatest astonishment at the novelty of their position, which little episode in their lives was doubtless soon forgotten by them on being permitted to enjoy themselves in feeding on their favourite food. Occasionally I have noticed them come out of their mines and rest, as though airing themselves on the under side of the leaf, and when their inclination led that way they re-entered their mines and re-commenced feeding. At times we may meet with a leaf peopled both by internal and external feeding larvæ, and to witness such a phase in their larval life is in my opinion a most interesting sight, as it shows how beautifully their masticatory organs are formed to suit the different periods of the larva's life, neither larva tearing the skin of the leaf, but leaving it intact, after robbing it of its internal tissues and outer fleshy covering.

I have not been able to collect any evidence as to whether it moults whilst a mining larva: the time having arrived for it to change its mode of living, it bites a little hole in the inferior surface-skin of the leaf, quits its mine and prepares to enter upon the next phase of its existence; and in order to effectually do so it throws off its skin, and invariably at the anal extremity. This moult generally takes place a few hours after the larva has finally

renounced all pretensions to the character of a miner: after a time the two anterior segments resume their original markings, and the little creature's body becomes speckled over with minute black spots, from each of which there projects a little black bristle; the dorsal vessel is white, but after an interval each side of its anterior extremity is observed to be bounded by a brownish coloured fluid, which in time deepens to a somewhat dull tone, and ultimately this fluid is noticeable as traversing each side of the dorsal vessel for about three-parts of its entire length. The larva will either feed solitarily or gregariously: the latter is undoubtedly its most usual mode of life, as they may be found grazing together in communities, consuming a considerable quantity of the epidermis of their food-plant. Soon after it commences life as an external feeder, it spins several silken threads across the part of the leaf on which it is feeding, each thread having a number of various-sized viscid globules of silk upon it. Now these globules of silk are purposely placed there by the larva, for if we closely watch its movements whilst engaged spinning the above-mentioned threads, we shall observe that the larva moves its head with a slow jerking motion, and that immediately after each motion we shall notice a deposit of silk in a globular form. The viscid globules are possibly intended by the larva as a sort of defence (if that is not their object it is difficult to assign any other purpose for them) to protect it from the attack of its natural enemies the Ichneumonidæ; if that be so, it would appear to be but a very imperfect protection, judging from the fact that one constantly breeds Ichneumons from these larvæ instead of moths. So far as I have hitherto observed, the body of the larva is never inhabited by more than a single parasitic larva at one and the same time: the latter mostly remains inside the body of its victim until it has spun its open net-work cocoon preparatory to entering the pupal state; the parasitic larva then rapidly feeds up, and in so doing absorbs all the juices in the body of its victim; the only evidence of the Chauliodus larva's previous existence is discernible in the presence of its dry empty shrivelled-up skin. The Ichneumon being then quite full-fed spins its own dense white cocoon underneath the open net-work of the cocoon of its unfortunate prey.

At the proper period the larva of the Chauliodus



throws off its tegument for the second time, its markings gradually re-appearing. The larva has a natural repugnance to feed in an exposed position, preferring to keep as much as possible on the under side of its various food-plants: this habit will in a measure perhaps explain the reason of our meeting with them so much more abundantly on the leaves of *Heracleum Sphondylium* than most of the other umbelliferous plants that they affect; the large size of its leaves affording them greater privacy, and exposing them less to the prying eyes of their enemies, birds and Ichneumons. As an out-of-doors feeder it only consumes the outer fleshy covering of the under side of its food, but when confined in the breeding-cage it feeds indifferently on both sides of its food-plants. The larvæ are of a most sociable nature, for, although I have purposely crowded them to excess, I have been unable as yet to discover any trace of unfriendliness towards each other. At intervals they leave off feeding and lay about on the food in a listless manner, and after a few hours fast, the white colour of the dorsal vessel nearly disappears, the fluid situate at its sides very frequently entirely disappearing, and re-appearing when the creature renews its feeding: this dorsal fluid is subject to changes of colour, at one time being dull brownish, deepening to a somewhat slate-colour, and at others it has a dull greenish tinge. Some of these larvæ when offered leaves of *Chærophyllum temulentum* ate large pieces out of them, yet when these self-same larvæ were removed on to plants of *Daucus carota*, *Torilis anthriscus* and *Anthriscus sylvestris*, they only skeletonized the leaves; and further, when a small portion of a leaf of *Heracleum Sphondylium* was placed in the breeding-cage along with them, a few hours afterwards they were nearly all observed to have forsaken the other plants to feed on the *Heracleum*. I believe that the larva moults three times, but that it has escaped my notice. On the larva's arrival at maturity the coloured fluids retire from its dorsal vessel, leaving the body of a yellowish white tint.

The larva thus constructs its open net-work cocoon. The silk of which this pupal abode is composed would appear to be entirely free from silken globules, and through the meshes of its cocoon the larva is distinctly visible. During this part of its larval and the whole of its pupal state, privacy it would appear is so essentially necessary for the creature's

comfort, that if the leaf, on the under side of which it has constructed its cocoon, be turned over and exposed to the light, the larva becomes uneasy, and if kept in that position for any length of time refuses to remain in its cocoon, and wanders away to some other locality that offers it the necessary privacy, and spins another cocoon; but if the leaf is at once replaced and allowed to remain undisturbed in its original position, the larva is pacified, and will remain inside its cocoon. After a few days residence in its cocoon its body becomes much shrunken, and at the proper period it slowly passes into the pupal form, that is to say, supposing it is not infested by a parasite. The pupa, which is about four lines long, is at first quite white, its whole outer surface after a little time becoming suffused with a pale brown tinge; each of the eyes has a small circular-shaped central black speck accompanied by a little darkish coloured dash, a slight distance beyond; the last two abdominal segments turn pale pinkish, deepening by degrees to dull pink; the anal segment, which is narrow and somewhat pointed, is covered at its extremity with some half dozen little hooked bristles. On each side of the ventral surface of the penultimate segment is situate a small tubercle or spur, and near the centre of the same segment two minute, dark brown-coloured spots make their appearance. As the pupa slowly waves its abdomen about, the tips of the wings appear edged with pinkish-coloured pigment, its head, thorax, wing-sheaths and abdomen turning to a somewhat darker brownish tint; the dorsal vessel then becomes visible along the abdominal segments; its eyes first turn brown, but afterwards deepen into a jet-black; the base of the abdominal segments, from the fourth to the seventh inclusive, become encircled with a narrow brown-coloured band, and the centre of the dorsal surface of the first and second abdominal segments then have a clouded look: a day or two afterwards the antennæ turn darkish, the head, thorax and wing-sheaths assuming another and a darker shade of brownish tint, the head and thorax particularly so; the dark cloud previously noticeable on the back of the two anterior segments of the abdomen has, by the time this stage of the coloration is reached, sunk down to the region of the fourth, fifth, sixth and seventh segments; the head becomes much blotched

with black pigment, the wings having several small dark pigmentary dots and dashes on them; a line of black pigment is also observable on the lower half of the back of the creature's wings, and finally ends in a blotch at the tips, the abdominal segments settle down to a darker tone, especially so along the back, and on or about the sixth or seventh day of its pupation the markings of the imago arrive at their full development. The imago in order to gain its liberty bursts open the front and back of its puparium, and, after inflating and drying its wings, enters upon the pleasures of its new stage of life. When disturbed the imago moves with a quick gliding motion, doubling and turning about with great swiftness. Although the autumn brood of this beautiful insect is well known to hibernate, I have failed season after season in keeping it alive beyond a few weeks.

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74, Napier Street, Hoxton, N.

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*Observations on the Economy of Dermestes Lardarius.*

By Mr. CHARLES HEALY.

DURING the season of 1866, I found that a number of the larvæ of this little beetle had taken up their residence inside my desk; I was constantly meeting with them hiding under the papers, &c., being unable to pay much attention to them: I however allowed them to remain in company with some larvæ of *Tinea biselliella*, *Æcophora pseudo-spretella* and *Ephestia elutella*; but after a time, on account of their emitting an unpleasant odour, I was compelled to collect and throw them away. Last April, almost every time I suddenly opened the desk I observed one or more of the perfect insects scampering about: this state of things continued until the middle of the following month, when, in consequence of sudden illness, I lost sight of them for three weeks.

On resuming office duties the first object that attracted my attention, on opening my desk, was the sight of some of my old friends of 1866, engaged feeding on some stale bread and cheese and arrowroot biscuit; and their re-appearance induced me to pay a little more attention to them than I had previously done. I noticed that the body of these larvæ was

white, the head brown, and that each segment had a brown horny shield; the segmental divisions were white, and the shields gradually encroached upon the belly of the larva, segment by segment, so that at last the penultimate and anal segments became quite encircled by the brown horny plates; the belly, or such part of it as remained uncovered, was white; the back of the penultimate segment being covered with a pair of curved pointed horns directed backwards over the anal segment; the body was plentifully sprinkled with reddish brown hairs; the thoracic legs were brown, darker at their upper articulations; the horn-like projections I noticed were darker at their base than they were at their anterior extremity. These larvæ shed their skins several times, but I am not in possession of the exact number of moults: at each moult I observed that, in order to escape from its old skin, the larva split the latter down the dorsal surface of the first four segments, and that in withdrawing its anal prolegs it left a little circular hole at the end of its thrown-off skin: I was interested in observing the manner in which they fed, piercing their food through and through, and tunnelling it in all directions. As they appeared perfectly content, and throve remarkably well, I offered them no other kind of food: they were exceedingly greedy, and would actually gnaw their way through a hard, stale piece of bread, their operations in that line completely surpassing the larvæ of *Ephestia elutella*. Although so greedy I observed no evidence of a cannibalistic tendency; it is true they might have fallen foul of and devoured one another whilst in their burrows, and I been none the wiser, in consequence of my not having ascertained their exact number. They fed on for several weeks, and would at the end of that time, had I permitted it, have assumed the pupal form within their tubular abodes.

When full fed the larvæ gradually became very sluggish, appearing at first as though in a sleepy, and afterwards a semi-torpid state, and when roused up rolled and tumbled about in a curious manner, having apparently almost lost the control of their actions; at last they became quite torpid, and on the lapse of a suitable interval passed into whitish-coloured pupæ, the two anterior pair of legs of which were folded over the breast, and the tarsi hung in a drooping posture down the centre of the little creature's breast, the posterior pair of legs

being carried down the abdomen and covered by the elytra, merely leaving the knees and tarsi exposed; and on the sides and anal extremity of the abdomen were arranged a number of lightish brown-coloured hairs. The dorsal surface of the first seven abdominal segments of the pupa were provided with decorations; the segments from two to six inclusive having two brown plates each, a narrow one at the top and a larger and broader one at the base, the abdominal segments one and seven only having one decorative plate each, and differing in their positions; the decorative plate on the first abdominal segment was a broadish one, and situate at the base of that segment, whilst there was only a thin narrow plate at the top of the seventh segment. The two horn-like projections on the back of the penultimate segment were also retained during pupation; but here I detected an alteration from their previous colour, as they were then whitish at their lower half, instead of dark brown, as when in the larval state, the upper parts retaining their original colour. After an interval the back of the head and thorax settled down to a bone-white tint, and shortly afterwards became dusted with a cloud of minute pale reddish brown-coloured dots; the eyes, which up to this time had remained white, now assumed a pale brown pigment, which first made its appearance on one side of the eyes, slowly stole over and imparted a pale brownish tint to them; the unguiculi were then observed to have become impregnated with a pale pinkish-coloured fluid, and while the eyes were slowly deepening from brown to black, the unguiculi changed their tone from pale to dull pink; the joints of the tarsal articulations then assumed at first a pinkish tint, and, just as was the case with the unguiculi, deepened into dull pink; the whole of the articulations of the tarsi becoming in their turn of a pale pinkish colour; the lower half of the elytra, as seen through the puparium, appeared of a faint bluish cast, shaded here and there by a darker tint; a thin line of pinkish-coloured pigment was then noticeable running along the base of the labrum; in some individuals this was represented by a series of dots; the mandibles, which a short time before had become outlined only with a pinkish fluid, now became entirely so coloured.

Keeping my attention fixed from day to day upon the little creature, I noticed that the anterior markings of the elytra

were beginning to develop themselves ; and while the latter part of the change was taking place the antennæ assumed a pinkish hue, deepening into a darker tint, and the unguiculi and articulations of the tarsi became blackish : at this stage of its development the pupa, when touched or irritated, gave expression to its sense of annoyance by jerking its abdomen and wriggling its unguiculi about. The coxæ, trochanters and knees, now entered upon the first phase of their coloration by assuming a pale pinkish hue, and the posterior portion of each elytron changed to a darker tint ; after the lapse of a day or two a very faint darkish tinge crept along the femora and tibiæ, spreading all over them, and this finally settled down to a duller tone ; at the same time the coxæ, trochanters and knees deepened into dull pink and then again into darkish. By the time all the above-mentioned changes had taken place, the front and sides of the thorax became margined with a thin, brown-coloured band, the under side of thorax being white ; a change was then noticed in the centre of the breast, as that part began to turn white, and ultimately assumed an ivory whiteness. For some days previously I had noticed the segments of the abdomen contracting and shrinking upwards, until at last the abdomen became shorter by the length of two segments, as compared with what it was when the pupal form was first assumed : all this was clearly visible through the puparium, a faint movement of the abdomen within its puparium seeming to invite attention to the fact ; the ventral surface of the abdomen on assuming its coloration turned faint darkish, the segmental divisions, as a series of much darker lines, being very noticeable and showing through the skin of the puparium.

In a few days the extremity of the puparium had a pale brown tint imparted to it : this on examination I found was caused by the reflection of a brown-coloured spot that had made its appearance at the anal extremity of the abdomen. On investigation, the back of the head and three parts of its thorax were found to be of a pale brown colour, the basal portion of the thorax being of a pale bluish cast, darker at the sides, and the darker markings situate on the anterior portion of the elytra were seen to be gradually developing themselves. The under surface of the head and thorax

becoming 'tinted with pale brownish, the sides of the inferior surface of the thorax, not having become discoloured stood out conspicuously white; they however shortly afterwards settled down to a similar tint to the other portions. When irritated the pupa, besides lashing its abdomen about, was then able to move its two anterior pairs of legs slightly. I observed no movement of the posterior pair, while all parts of the markings of the future imago were slowly settling down to their final coloration; the ivory-white spot situated on the little animal's breast became impregnated with a reddish-coloured fluid, which distributed itself over the abdomen and breast, even permeating the elytra, and at first sensibly affected their colour; to the abdomen and breast it imparted a dull red tinge. In two or three instances this mysterious pigmentary matter was observed to have assumed a crimson hue, in which cases the little insects so affected never arrived at maturity: in most cases, after the lapse of a few days, the insect's markings settled down to their natural and proper colours, and the little coleopteron liberated itself from its puparium; the breast and abdomen of some individuals, however, were observed, for many days after they had escaped from their puparium, to be more or less discoloured by the reddish-coloured pigment.

It was my good fortune to be present at the emergence of one little fellow: it effected its partial escape by first splitting open the back part of its puparium, and through the fissure thus made it put out its head, and looked about in what appeared to me a most droll sort of a manner: after a little rest, a further splitting of the puparium took place to the extent of the four anterior segments, in an exactly similar way to what I had observed when a larva; it then drew its two anterior pairs of legs out of their sheaths, and, after twiddling its legs about for a few minutes, finally drew out the remainder of its body and toddled off about its business. Having about a dozen of the imagos in a box, I offered them a similar diet to what they had enjoyed whilst in the larval state, but they did not appear to care much for the proffered food: one of them shortly afterwards died, and his comrades ate every bit of him excepting the elytra; others that were shut up with a larva of their own species, never injured it, but when a larva of the alder mining saw-fly, *Phyllotoma*

microcephala of Klug, was introduced, they attacked and ate it up in a very short time. The study of their economy having afforded me so much delightful occupation I had not the heart to detain them prisoners any longer, and so set them at liberty.

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74, Napier Street, Hoxton, N.

*Early Appearance.*—I saw two or three specimens of *Pieris Rapæ* flying about in the garden yesterday.—*H. Doubleday, Epping, March 16, 1868,*

*Larvæ wanted.*—Will somebody kindly supply me with larvæ of *B. rhomboidaria* and *repandata*? I will send in return larvæ of *perfumaria*.—*J. P. Barrett, 29, Radnor Street, Peckham, London, S.E.*

*C. boreata for Exchange.*—On the 10th of November I took a nice lot of *C. boreata*, and have some for exchange, and shall be glad of offers. Parties not hearing from me in the course of a week may conclude that I am not in want of what they offer.—*William Hydes, Bagshaw's Buildings, Park Spring, Sheffield.*

#### BRITISH INSECTS.

Mr. J. C. STEVENS begs to announce he will Sell by Auction, at his Great Room, 38, King Street, Covent Garden, about the middle of April, *The Collection of Insects formed by the late Mr. John Chant*, together with the mahogany and other cabinets. Catalogues are preparing, and will be ready one week prior to the sale, and the day of sale advertised in the "Athenæum" and other papers.

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# THE ENTOMOLOGIST.

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MAY, MDCCCLXVIII.

[PRICE 6D.

*Notes on recent Continental Publications on Coleoptera.*  
By G. R. CROTCH, Esq.

IN the 'Berliner Entomologischer Zeitschrift' for 1867 is the beginning of a "Contribution to the Fauna of Germany," and several species which also occur in England are noticed in this, as under:—

*Euplectus punctatus*, *Muls.* Two specimens; one at Hampstead, taken by Mr. E. W. Janson; the other by myself.

*Endophlœus spinosulus* appears to have been once taken at Baden-Baden!

*Mordellistena inæqualis*, *Muls.* [*pusilla*, *Redt.*] lives in the stems of *Valeriana dioica* and *Artemisia vulgaris*. It passes the winter in the imago state.

*Dorytomus Silbormanni*, *Wenck.* This seems to be abundant with us in early spring. It differs from *D. maculatus* by its larger size, less closely punctured thorax, and the more strongly toothed femora.

*Ademonia suturalis*, *Thoms.*, is a new species, separated from *A. Capreæ*. It is smaller, and the thorax is much more sparingly punctured; the suture is generally dark brown. This seems to be not uncommon with us on heather.

The close correspondence of our fauna with that of Sweden renders any addition to the latter a matter of interest to us. I purpose therefore to give a brief analysis of some of the new species brought forward by C. G. Thomson in his 'Supplement' (Vols. ix. and x. Part I.), as probably all will be eventually found in Great Britain, and several of them have already been found. Besides these novelties, he has added seventy-seven species to the list, of which only fourteen do not already occur in England; so that the correspondence of

the faunas is greatly increasing, especially as we constantly find more of his species, and, when once attention is directed to them, no doubt nearly all will turn up. I am greatly indebted to M. Thomson for sending me nearly all his new species to examine, and expect a further contribution shortly, as he tells me he has described several species recently.

*Bembidium Sahlbergii*, *Zett.*, is identified with our *B. Schuppelii*. *B. æneum* is considered as a variety of *B. biguttatum*.

*Æpus marinus*, *Ström.*, has never been found since 1783!

*Pterostichus cupreus* is divided into two species:—

*P. puncticeps*. Larger; forehead punctate; posterior tibiæ with about ten setæ.

*P. pauciseta*. Smaller; forehead smooth; posterior tibiæ with about six setæ.

Both these occur in England: the latter is probably our old *P. versicolor*.

M. Thomson maintains the distinctness of *Anchomenus viduus*, *mœstus* and *emarginatus*, and enumerates their differences.

*Hydroporus hyperboreus* is sunk as a variety of *H. assimilis*, *Pk.*

*H. Bohemani* is identical with our *H. oblongus*, *Steph.*

*H. pubescens* M. Thomson considers to be the true *nigrita*, *Gyll.*, and *nigrita*, *Er.*, he considers to be *pubescens*, *Gyll.*; hence the names are interchanged.

*H. glabellus* is a new species, near *H. pubescens*, *Gyll.* (*nigrita*, *Er.*), and is not rare in England; but there is some confusion here amongst *nigrita*, *discretus* and *glabellus*, that is not yet unravelled.

*Hydaticus transversalis* is split into two species, only one of which can I find in my collection; others may probably be more lucky:—

(1). *H. punctipennis*. Elytra punctate, especially towards the sides; the yellow margin with black lines down it; the four anterior tibiæ ferruginous.

(2). *H. lævipennis*. Elytra smooth; intermediate tibiæ piceous.

*Ilybius 6-dentatus* is regarded as a variety only of *I. obscurus*. I have noticed that they rarely, if ever, occur together.

*Agabus*. M. Thomson describes three new species, besides adding three others to his list. One of these, *A. unguicularis*, appears to resemble *A. affinis* very closely, differing principally in the shape of the laciniaë of the metasternum. All my examples belong to *A. unguicularis*.

*A. clypealis*, *n. sp.*, is like *A. congener* and *A. paludosus*.

*A. biguttatus*, *n. sp.*, is more like *A. affinis*, but of a greenish brassy colour, and differently sculptured.

*Sphæridium marginatum*, *Fab.*, is regarded as distinct from *S. bipustulatum*, and I think rightly. The apical yellow spot is wanting, and there are no punctured dorsal striaë. Both forms occur here.

*Cercyon lugubre*, *Payk.*, is also divided into two species:—  
*C. lugubre*, *Gyll.* Subopaque; elytra with a defined red mark at the apex; mesosternum linear-lanceolate.

*C. granarium*, *Er.* Shining; elytra unicolorous; mesosternum ovate. Both occur in England, *C. granarium* being much the rarest.

*Philonthus carbonarius* is said by Thomson to be identical with our specimens of *tenuicornis*, *Muls.*, some of which I forwarded to him.

*P. nigriventris*, *n. s.* Near *P. sordidus*, but with the elytra closely though strongly punctured; also near *P. cephalotes*, but with the head and thorax black, not brassy, and the legs darker. I have not seen this.

*Quedius fulgidus* is divided into five species:—

*Q. 4-punctatus*. A large species, with the elytra red, and the thorax with two punctures placed obliquely on either side the discal portion.

*Q. temporalis*. Entirely black, varying into piceous; thorax without the lateral punctures; sixth segment of the abdomen with three lateral setæ only. This seems to be the universal form.

*Q. Fageti*. Elytra more sparingly punctured; abdomen not versicolorous: smaller and with shorter antennæ.

*Q. brevicornis*. Elytra red, and the setigerous punctures of the head differently disposed.

*Q. puncticollis*. Elytra red; head and thorax obsoletely punctate; legs black; setigerous punctures arranged as in *Q. 4-punctatus*. This is the species registered in my 'Catalogue' as *Q. brevicornis*. All the other forms

occur, but a careful examination of very large material will be requisite before regarding them as specifically distinct.

- Q. resplendens* is withdrawn as a variety of *Q. lævigatus*.  
*Xantholinus picipes*, described in M. Thomson's former volume, appears to occur in ants' nests with *X. atratus*. I have specimens from several parts of England, and it seems to me to be quite distinct.
- Lithocharis lætus*, *n. sp.*, is very near *L. ruficollis*, *Kr.* (tricolor, *W. C.*), but has the male characters of *L. melanocephalus*.
- Autalia puncticollis*, *n. sp.*, is identical with Dr. Sharp's species of the same name.
- Aleochara succicola*, *n. sp.*, is a new species, near *A. mœosta*, but with the thorax more closely punctured, the elytra subrugulose, and the antennæ with the apical joints more transverse. I have not yet seen English examples.
- A. grisea*, *Kraatz*, is named by him *A. nitidula*, while he uses the name *grisea* for *A. algarum*, *Fauv.*; thus again increasing the confusion in this group.
- Gyrophæna bihamata*, *n. sp.*, is like a small *G. lævipennis*, but with the head more finely punctate, and with the last segment deeply emarginate in the male.
- G. puncticollis*, *n. sp.* = *G. Poweri*.
- Ocyusa longitarsis*, *n. sp.* This is probably identical with our *O. ruficornis*, *Kr.*
- Oxygoda metatarsalis*, *n. sp.* Near *O. vittata*, but with the first joint of the posterior tarsi scarcely twice the length of the second.
- Pycnaræa curticollis*, *Thoms.*, is now identified with *Hypogropha cunctans*, *Kr.*, and a new species, *P. nigripes*, is described.

In the great genus *Homalota* eight species are described as new, and five are added to M. Thomson's list. In the present state of our knowledge it would be useless to quote the remarks about these, especially as we may soon expect a contribution from Dr. Sharp on this subject. At least four of the new species have been identified as British.

*Evæsthetus pullus*, *Thoms.*, is recognized as being only *E. ruficapillus*.

*Homalium pusillum* is split into two species.

- H. punctipennis*. Slightly shining; thorax deeply foveolate; elytra visibly punctate. Under bark of birch.
- H. abietinus*. Opaque; elytra scarcely visibly punctate. Found under bark of pine. Both species occur in this country.
- Catops flavicornis*, *n. sp.* Intermediate between *C. picipes* and *nigricans*. I cannot clearly make this out, but most of my *nigricans* appear to agree with it.
- Scydmaenus denticornis*, *Thoms. olim.* = *S. claviger*, *M. et K.*, while our *S. denticornis* does not occur there.
- S. (Euconnus) fimetarius*, *Thoms.* Near *S. hirticollis*, from which it may be distinguished by the shorter and closer hairs on the elytra, the darker colour of the last joint of the palpi, and the fact of its living in hotbeds, &c. I have found this in several localities.
- Hister arenicola*, *n. sp.* Near *H. bissexstriatus*, but with the third anterior dorsal stria abbreviated, and other minor points of difference. Found on sand-hills. This I have not yet seen in England.
- Aphodius sabulicola*, *n. sp.* Near *A. punctato-sulcatus*, but shorter, smaller, more dilated posteriorly, and the thorax not margined with yellow at the base. I have seen two examples apparently referable to this species.
- Cis microgonus*, *n. sp.* Like *C. bidentatus*, but with very short, scarcely prominent angles to the thorax, which is unarmed. I have not seen this as yet.
- Lathridius (Conitharsa) brevicollis*, *n. sp.* A distinct species, with the thorax like *L. rugosus*, but the elytra like *L. consimilis*, to which it comes nearest. I have not seen English examples.
- L. crenicollis*, *n. sp.* This is evidently our *L. testaceus*, which no one identifies from Stephens' descriptions.
- Corticaria hirtella*, *Thoms.* = our *C. fulva*, *Mannh.*
- Micrambe pilosula*, *Thoms.* This he identifies by comparison of the type with *Crypt. Vini*, *Er.*
- Cr. serratus*, *Gyll.*, *M. Thomsom* forms into a new genus, *Henoticus*.
- Atomaria puncticollis*, *n. sp.* A new species, allied to *A. fumata* and *A. nana*. It is not *A. Wollastoni* certainly, but must be near *A. Barani*, *Bris.*, though more sparingly punctured.

‘*British Social Wasps; an Introduction to their Anatomy and Physiology, Architecture and general Natural History, with illustrations of the different Species and their Nests.*’ By EDWARD LATHAM ORMEROD, M.D. Post 8vo; 270 pages letter-press and fourteen Plates, four of them coloured. London: Longmans. 1868.

THE entire history of British Social Wasps is comprised in the works of Mr. Frederick Smith, of the British Museum, and the late Mr. George Newport: it has been published piecemeal as well as in a collected form. I give the dates and titles of these invaluable papers.

1843. *Zoologist*, vol. i. p. 161. Descriptions of the British Wasps.
1850. „ vol. viii. p. 2678. On the Abundance or Scarcity of the Wasp.
1851. „ vol. ix. Appendix clxxiii. On the Specific Difference of *Vespa vulgaris*, *Linn.*, and *Vespa germanica*, *Panzer*.
1852. „ vol. x. p. 3699. Observations on the Economy of *Vespa norvegica* and *Vespa rufa*.
1856. „ vol. xiv. p. 5169. On the manner in which *Vespa rufa* builds its nest.
1858. *Catalogue* of the British Fossorial Hymenoptera, Formicidæ and Vespidæ, in the Collection of the British Museum, p. 211—22. Section, Social Wasps.
1859. *Zoologist*, vol. xvii. p. 6465. Topsell’s History of the Wasp.
1864. „ On the Abundance of Spring Wasps.

Mr. Newport’s only paper is published in the ‘Transactions of the Entomological Society of London,’ vol. iii. p. 189.

The Museum Catalogue contains a summary of the whole, and really leaves nothing to be desired: I cannot, however, turn from this brief sketch of the bibliography of British wasps, without a passing allusion to my late talented friend Mr. Stephen Stone, of Witney, whose knowledge of the vespal economy has never been equalled by any entomologist living or dead. I never think of this most patient and accurate

observer, and truly good man, without regretting that, from an excess of modesty, he always shrank from giving publicity to his researches, and that so vast an amount of information as he possessed should be so completely lost to Science.

It is no light matter to take up the study of wasps. There is scarcely any insect so universally feared and detested as the wasp: it is a very rare thing indeed to find a male of the genus *Homo* who does not consider it a meritorious act to kill a wasp; or a female who would consider herself entitled to make her appearance in *good society*, unless she screamed at every wasp that entered her drawing-room: in both instances some allowance must be made for the love of display, but after deducting this, there remains a very considerable residuum of real antipathy and real fear. To take up such a creature and write lovingly about him, as Dr. Ormerod has most certainly done, requires a large amount of what is commonly called "pluck;" and I cordially and unreservedly congratulate him, not only on his courage, but on his success.

Nevertheless it is the duty of the 'Entomologist' to be just as well as generous, and to restrain within due bounds that excess of "gush" with which it is ever ready to welcome a fellow-labourer in the field of Science.

In the first place, I may observe that Dr. Ormerod's attempts to display erudition as an entomologist are singularly unhappy; nothing can well be more unfortunate than the following sentence on classification:—"The Eumenidæ or solitary group are widely distributed over the surface of the globe. Perhaps they are less variously represented in Great Britain than in most other places, for we have only one very local species, *Eumenes coarctata*, and twelve varieties of *Odynerus*, or of kindred species not readily distinguished from it." I cannot pretend to say that I do not perceive a meaning looming through this obscure phrasology, but that meaning would have been better conveyed thus:—"I have read with considerable attention Mr. Smith's detailed descriptions of the British Eumenidæ, pp. 197—211 of his *Museum Catalogue*, and I find he describes one species of *Eumenes*, and twelve of *Odynerus*: the *Eumenes* seems very distinct, but as for the twelve species of *Odynerus*, I find great difficulty in distinguishing them from each other." And no blame to him either, for they are very hard to make out.

The number of British social wasps, including the hornet,—which is legitimately a wasp, in the language of Science,—is but seven; and these are rendered so perfectly clear by Mr. Smith's descriptions that we scarcely needed Dr. Ormerod's.

One hundred and twenty-six pages are devoted to the anatomy and physiology of the wasp, although the author modestly informs us he does "not propose to enter into a detailed account of the anatomical structure of wasps." On reading that portion of the essay on structure which relates to the thoracic mass, I cannot say that I think the author has avoided that confusion which he so feelingly deprecates. He says truly "not a little difficulty has been thrown over the subject by confusion in the nomenclature of the various parts of the thorax." Dr. Ormerod has not escaped this confusion, since it appears to me that the thoracic mass consists of *four* segments instead of *three*, and therefore that any nomenclature of parts founded on the assumption that they are but *three* must be erroneous.

Again, Dr. Ormerod says, "The morphological nature of the loose ring or collar which surrounds the neck has been the subject of much discussion, but it is now pretty generally agreed that it represents the sternal portion of the thorax, and should, strictly speaking, *be called the prosternum.*" Now, when I look at the excessive dorsal development of this "loose ring" in *Janus*, *Phyllœcus* and *Cephus*, I cannot conceive how the term *prosternum* can be applied to it: the sternal area of an insect is the under side, and the terms "prosternum," "mesosternum" and "metasternum" are constantly applied to the under side of the pro- meso- and meta-thorax, and not to any portion of the dorsal surface. The word "sternum," and no one knows this better than Dr. Ormerod, is applied to the breast: the breast-bone in man or in a bird is the sternum, and hence by analogy, not by homology, the term sternum has been applied by entomologists to the under side of the thorax of an insect, and no part of the dorsal area can with propriety be called a sternum or prosternum, or breast or breast-bone. I know next to nothing of the internal anatomy of the wasp, and am willing to take it for granted that our author has exhibited more precise knowledge here.



In the chapter on social economy a great deal of useful and interesting information is arranged and combined; and this is the best part of the work. The figures of the wasps are far from satisfactory; those of the nests are better. But how comes it that the wasp-parasites are altogether omitted? *Xenos* and *Rhipiphorus*, besides many of our Diptera, have no other home. As well might a historian of bees omit the cuckoos, as the historian of wasps omit the parasites andinquilines which are so inseparably intertwined with their life-history, and form one of its most interesting features.

EDWARD NEWMAN.

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*Life-history of Acidalia bisetata.*—The egg is laid in July, on the leaves of *Leontodon taraxacum* (dandelion), and the young larvæ emerge in the beginning of August: the feed during the remainder of the autumn with considerable avidity, but grow very slowly; and throughout they winter they continue to nibble the food-plant, without showing any positive signs of hybernation: in March they begin to feed again more freely, but still increase very slowly in size, and towards the end of April they attain their full size, having been feeding more or less for nine months: they then rest on their food-plant, in a straight and rigid position, attached by the claspers only, and at an angle of about thirty degrees with the object on which they are resting: if annoyed they fall from the food-plant and feign death, assuming the pot-hook posture so observable in the larva of *Abraxas grossulariata* and other Geometers under similar circumstances, and remain a long time perfectly without motion. The head is exserted and prone; it is scarcely so wide as the 2nd segment; into this it is never even partially received: it is slightly notched on the crown, and rough like shagreen, and emits several small but stiff bristles: the body is very long and leach-like; it gradually increases in size from the head to the 12th segment; it is transversely wrinkled, each segment being divided by deep furrows into six or eight sections, six being the number on the anterior segments, eight on the remainder; it has on each side a very conspicuous dilated skinfold; every part of the body emits scattered short stiff

bristles. The head is nearly black, with two very small and inconspicuous pale longitudinal streaks on the crown. The colour of the dorsal surface of the body is dull very pale wainscot-brown, approaching to putty-colour; there are four darker but very indistinct and very narrow stripes down the back, the outer one of which on each side has two black spots on each segment; the ventral is manifestly darker than the dorsal surface; there is a medio-ventral stripe dilated in the middle of each segment; and on each side of this there is a very narrow and waved stripe extending from the legs to the ventral claspers; the legs are pale, the claspers and the ventral area between them green and semihyaline. At the end of April or beginning of May the larva spins a slight cocoon at the base of the leaves, and therein changes to a pupa. The moth does not make its appearance until the end of June. I am indebted to the kindness of Mr. Porritt, of Huddersfield, for the opportunity of describing this larva: the entomologist who possesses Sepp's beautiful work will probably perceive some trifling discrepancy between his description and mine, but this must arise from our having before us different varieties of the insect: I have no doubt of Sepp's figure and description being produced with his unvarying accuracy.—*Edward Newman.*

*Life-history of Eubolia palumbaria.*—The egg is laid on the twigs of broom in July, and the caterpillar is hatched during August: it eats but little, and grows very slowly during the autumn, hybernating very early: in March and April it feeds again on the young leaves, and is full fed in April. It then rests in a perfectly straight and stick-like state on the twigs of broom, the entire ventral surface being appressed to the twig; when removed it retains exactly the same position, appearing rigid and lifeless, the head prone and the mouth brought into contact with the legs, which are crowded together, and forming a shapeless mass; but if the larva be only irritated and not forcibly removed it will gradually raise its anterior extremity, arch its back and bend its head beneath its body until it comes in contact with the eighth ventral segment. The head is slightly narrower than the second segment and notched on the crown: it is opaque, rough, and emits a few short bristles: the body is dilated at the sides by a very conspicuous skinfold, and emits from

various parts of its body, more particularly the two extremities, a few scattered stiff and short bristles: the anal segment is without these two points directed backwards which are of such common occurrence in some genera of Geometers. The head and body are putty-coloured, but vary very much in tint, some specimens being very light and almost unicolorous, others (but generally the dorsal is decidedly darker than the ventral area surface, and is transversed throughout by interrupted stripes of a dingy smoky brown) in some instances are entirely broken up into spots, in others they exhibit a considerable amount of continuity; the spiracles are situated just within the dorsal area; they are very small and very black: there is a pale medio-ventral stripe rather broad and intersected throughout by an indistinct but slightly darker stripe; it is bordered on each side by a very distinct darker stripe; these two darker stripes unite at the base of the third pair of legs and also between the ventral claspers, thus completely enclosing the medio-ventral paler stripe. In confinement I found these larvæ would only feed on broom (*Spartium scoparum*); when full fed they spun rather compact cocoons among their food, composed of the young leaves and silk, and in these turned to shining pupæ of a reddish brown colour. The moth appears in June and July. I am indebted to Mr. Doubleday for a supply of this larva, which was unknown to me at the time of publishing the species in my 'Illustrated History of British Moths.'—*E. Newman.*

*Description of the Larva of Hadenæ adusta.*—The egg is laid in June and July on the leaves of *Salix caprea* (sallow), and the larva emerges in August; at first it is a dingy green colour and without markings: it attains its full growth before the end of September, and then rests in nearly a straight position on the twigs of the willow, but when annoyed it falls to the ground rolled in a compact ring and feigns death; in this posture it remains but a few seconds, and then reascends the stems of the willow with great activity. At this period it nearly abandons the leaves of the willow as food, and feeds almost exclusively on those swollen flower-buds which contain the male catkins of the ensuing year. Head semi-porrect, subglobose, highly glabrous and scarcely narrower than the 2nd segment: body almost imperceptibly attenuated at the anterior extremity, otherwise uniformly cylindrical, the

dorsal surface transversely wrinkled. Colour of the head dingy green, reticulated with brown; dorsal surface of the body pale purple-brown, inclining to pink on the 2nd, 3rd and 4th segments, and obscurely reticulated throughout with smoky brown; spiracles pale wainscot-brown, surrounded with jet-black: ventral surface pale olive-green, irrorated with dingy white, many of the white markings emitting pale hairs; claspers concolorous with the ventral surface; legs pale transparent green tipped with pink. At the fall of the leaf it descends to the ground, and, entering the earth, forms a hybernaculum, in which it remains until April, and then assumes the pupa-state, the moth making its appearance in May or June. For a supply of this larva and information respecting its economy I am indebted to Mr. Wright.—*E. Newman.*

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*Entomological Notes, Captures, &c.*

*Galls and Gall-insects.* — I send you a few Hymenoptera, &c., which I have reared from galls during the past summer. Unfortunately, from my limited knowledge of that order of insects, I can say but little about them, but the imagos may interest you.

Those on No. 1 card [*Cynips Fecundatrix*] are from the artichoke-gall of the oak. The eggs appear to be laid on the leaf and fruit-buds indiscriminately; when on the latter the young larva eats its way down into the germ of the future acorn, which ceases growing, and the cup becomes unnaturally developed, forming a dense imbricated mass of scales: when on the former I cannot, after the most careful search, discover that a gall is formed at all, as in all my specimens the young larvæ were found without other covering than the dwarfed leaves, which formed a much looser habitation than the fruit-bud. The galls (are they galls at all?) should be collected not later than the middle of August; after that date most of them will be found to be empty, having been eaten out by the wood-tit, which destroys large numbers of them. The imagos sent emerged August 30th and September 2nd; since then I have had none come out.

No. 2 [*Seladerma Caprææ* and a species of *Platygaster*, both of them parasites] are from the woody galls of the goat-

willow, which were collected in February, and the imagos emerged in June. [Of course these are not gall-makers.]

No. 2 [*Eurytoma gracilis*, a parasite] is from a gall formed on the midrib of an oak-leaf, which gave the leaf a very crumpled appearance. Collected August 3rd; imago out August 10th.

No. 4 [*Urophora Cardui*, a dipteron, and *Eurytoma plumata*, its parasite] are from the large globular galls of the star-thistle, which were collected in July. The large dipteron emerged from them July 27th, and the six Hymenoptera on August 13th. One of them has deep red eyes, and both species form egg-shaped cocoons in the interior of the gall, which is very dense when dry, but a passage is always left for the exit of each of the imagos at the crown.

No. 5 [One of the Cynipidæ] were bred from a curious elongated gall, formed in the flower-stalk of a species of knapweed (gall enclosed): it was gathered in November, and the imagos emerged June 20th. They appear to be scarce here, as I could only find two.

No. 6 [*Cynips Kollari*], from large globular woody galls of the oak.

No. 7 [*Cynips Quercus-folii*], from soft cherry-like galls of the oak-leaf, which emerged December 20th. — *Henry Moncreaff*; *Southsea*.

[In all cases of doubt Mr. Walker has most kindly supplied the scientific names.—*E. Newman*.]

*Diurnea fagella* at Leeds. — This species occurred this spring in great profusion in a wood adjoining my house. The male is a very sluggish insect, and, though provided with ample wings, I do not remember to have seen them used voluntarily. All day long they sat motionless on the trees, and were there at night when I went round with a lantern: if removed and thrown up into the air, they almost invariably flew to the nearest tree, and at once settled down again to their slumbers in a crevice of the bark. I was struck with the great apparent disparity in the numbers of the sexes: of the male dozens might be seen on the trunk of almost every oak, whilst of the semi-apterous female I only saw about a score altogether. The larva of *D. fagella*, when full fed, spins up between united or folded leaves: when these fall they must often be carried by the wind far from the tree

on which they grew; and I imagine the explanation of the apparent scarcity of the females to be that the majority of them remain where they emerge, amongst the leaves and rubbish on the ground: the females which I did see were found towards evening, on the trunks of the trees, often running rapidly over the bark, apparently in search of their sleepy partners; indeed, in this species the usual order of Nature seemed to be reversed, the male sitting still, waiting for the female to find him and arouse him to a sense of his duty. There was something almost ludicrous in this aspect of affairs,—a dozen elegant gentlemen asleep on a tree, and a stout lady bustling up the stem in search of a husband. One might almost fancy that previously to going into pupa they had agreed to meet again on the tree-trunk, but that owing to the unfortunate non-development of their wings very few of the ladies had been able to keep the assignation. Be that as it may, the males sat on unmoved, until, *tempus Edax rerum*, very often in the shape of a tom-tit, released them from their engagements. Both sexes vary much in colour; some are almost white, others perfectly black; an intermediate shade, closely assimilating to the colour of oak-bark, was much more abundant than either of the extreme varieties. I shall be glad to send a series of the insect to any one who wishes for them. — *Edwin Birchall; Airedale Cliff, Leeds, April 9, 1868.*

*Amphydasis prodromaria.* — Is it usual for “cripples” to pair? I had a female *A. prodromaria* emerge last week, and kept it a few days. Its wings were crippled, and very little larger than when it first emerged from the chrysalis. It was placed in a roomy box, and readily paired with a male which emerged a few days afterwards, and has deposited eggs.—*H. McDowall; Kettering, March 16, 1868.*

*Xylomiges conspicillaris near Gloucester.* — I have to record the capture of the rare *X. conspicillaris*, which appeared in one of my breeding-cages on the 1st inst. It was dug with other pupæ, but was unrecognized among about 600 commoner species until it appeared *in propria personâ*. This is the second specimen I have taken in this neighbourhood; the previous one several years since, when a friend from Yorkshire succeeded in obtaining two specimens.—*J. Merrin; Gloucester, April 21, 1868.*

*A list of Eupitheciæ taken in Derby and the neighbourhood, with Notes.*—It may be interesting to some young collectors to know the number of Eupitheciæ that I have taken in this locality. The following I have taken in the larva state, with the exception of one or two :—

Venosata. In seeds of *Silene inflata*, July.

Linariata. In seeds of *Linaria vulgaris*, July and August.

Pulchellata. In flowers of *Digitalis purpurea*, during July and August.

Centaureata. I took a female of this species on September 8th, at light, and obtained eggs, from which I have bred a good series.

Subfulvata. On leaves and flowers of *Achillea millefolium*. September and October.

Plumbeolata. On flowers of *Melampyrum pratense*, in July and August.

Isogrammata. This species has been taken here, but not by myself. I have, however, met with it in Trentham Park Gardens, Staffordshire; very common in buds of *Clematis vitalba*, in August.

Castigata. On heath, and on *Angelica sylvestris* and many more plants, in September and October.

Trisignata. On seeds of *Angelica sylvestris*, September and October.

Albipunctata. On seeds of *Angelica sylvestris*, September and October.

Valerianata. On flowers of *Valeriana officinalis*, July.

Pimpinellata. On seeds of *Pimpinella saxafraga*, in August and September

Fraxinata. This species I take in the pupa state all through the winter, under loose bark and moss, on the trunks of ash trees.

Nanata. On heath, during September and October.

Subnotata. On flowers and seeds of *Chenopodium*, in August and September.

Vulgata. On hawthorn and many more plants, in August and September.

Absynthiata. On flowers and seeds of *Senecio Jacobæa*, September and October.

Minutata. On heath, September and October.

Assimilata. On wild hops, August.

*Exiguata.* On hawthorn, September.

*Sobrinata.* On Juniper, both Irish and Chinese, in May.

*Rectangulata.* On apple flowers, April and May. I also take the pupa of this species under loose bark and moss of apple, May and June.

Through the kind assistance of some friends I have bred *E. Lariciata*, *Virgaureata*, *Campanulata* and *Tenuiata*.—*Geo. Baker* ; 47, *Kedleston Street, Derby, March 16, 1868.*

*Early White Butterflies.*—I see a notice, by Mr. Doubleday (*Entom. iv. 64*), of an early *Rapæ* on March 15th. As this is a very cold place, it may be worth while recording that on February 24th a white butterfly was seen (stated by the observer to be a large white), a second on March 4th (stated to be a green-veined white), and on March 12th and 14th specimens of *Napi* were captured. As regards the value of the two former notices, I can only say that, whether they were *Brassicæ* and *Napi*, as represented, there were certainly white butterflies seen at those early dates, far earlier than we have ever recorded before.—*T. A. Preston* ; *Marlborough College, Wilts, April 15, 1868.*

[I think these early appearance of white butterflies very interesting, as the species of this genus never hibernate in this country, and the specimens noticed must have been bred this year.—*E. Newman.*]

*Early Days.*—Several letters have lately appeared in the 'Standard' under this heading, recording the appearance of *Gonepteryx Rhamni*, at various places, in the month of February. To my mind they only prove that we have had some bright warm days. A far more trustworthy sign of *early days* is the appearance this year of the "cockney" (*B. Hirtaria*) on the 9th of March, when it usually appears at the beginning of April.

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*Exchange.*—*Melitæa cinxia* (larva, pupa or imago) in exchange for eggs, larva or pupa of any other species not very common. Please write first ; if no answer in a week, the offer declined.—*W. Jordan* ; *Binstead, Ryde, Isle of Wight.*

*Address wanted.*—If Mr. White, of Reading, will kindly forward me his address, I shall be happy to send him some eggs of *L. dispar*, as promised.—*R. W. Wright* ; 28, *Devonshire Road, Hackney, London, N.E.*



# THE ENTOMOLOGIST.

No. 54.]

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[PRICE 6D.

*Proceedings of the Entomological Society of London.*

February 3, 1868. — H. W. Bates, Esq., President, in the chair.

The President, after thanking the Society for the honour conferred upon him by his election to the chair, nominated as Vice-Presidents, Sir John Lubbock, Mr. W. Wilson Saunders, and Mr. Stainton.

Mr. Bond exhibited a female specimen of *Drilus flavescens*, the second specimen of that sex, he believed, which had been found in this country. On the 1st of April, 1867, Mr. J. E. Harting was collecting shells on the South Downs at Harting, Sussex, and the *Drilus* was discovered in a shell of *Helix Ericetorum*. The larva has for some time been known to live in snail shells (see Proc. Ent. Soc. 1858, p. 9), and Mr. Bond suggested that the female had been hatched in the shell in which it had been discovered, and had never quitted it until disturbed by Mr. Harting.

Mr. Bond exhibited larva-skins of a species of *Dermestes*, which he was at first informed had not only destroyed the bladder-coverings of sixty pots of preserved fruits, but had also eaten a considerable portion of the contents; but on further inquiry it turned out the larvæ had not in this case eaten any of the fruit, but merely damaged the surface, which was covered with larva-skins and "what appeared to be powder or small eggs." Mr. Newman, however, had informed Mr. Bond that a city house had recently sustained great loss from the same insect: in this instance the pots of marmalade were covered with paper only, not with skin, and the larvæ had actually consumed part of the contents, and rendered the whole worthless.

Mr. M'Lachlan had found quantities of a *Dermestes* larva in the timbers of a ship, upon which they had fed. Mr. F. Smith had reared *Dermestes* from timber; and Mr. Janson

had often noticed that the larvæ would forsake hides and take refuge in the wooden flooring of a building, but this was probably for pupation, not for sustenance.

Mr. Bond also exhibited a specimen of *Bombyx Quercus*, in which the colours of the male and female were combined.

The Hon. T. De Grey exhibited *Hypercallia Christierniana* (see Proc. Ent. Soc. 1867, p. xcii), captured between Shoreham and Sevenoaks, in the locality where the insect was a few years ago taken by Mr. W. Farren. Also *Acidalia rubricata* and *Opostega reliquella*, Zell., both taken in Norfolk in 1867; see Ent. Ann. 1868, p. 131: with reference to Mr. Stainton's remarks there published, on the swarming of *Opostega alaciella*; Mr. De Grey added that he also had found that insect in such considerable numbers together, that the term "swarming" was not inappropriate.

Sir John Lubbock read the following note from M. Signoret:—"At two recent Meetings mention was made of the *Aphis* which lives in the galls of the the elm, and it was spoken of as an object almost unknown at the present day, Geoffroy, Réaumur, De Geer and Et. Geoffroy (1764) being the only authors cited as having treated of this insect. It would be unfortunate for Hemipterology if that branch of Natural History had since that time fallen into oblivion, but it is not so, and to begin with I have only to cite Mr. Francis Walker, who speaks of it in his List of Homopterous Insects, p. 1049, and who cites some fifteen authors, all of whom describe it more or less at length; to whom I may add Blot [Mem. Soc. Linn. de Caen, 1824), Hartig (Germar's Zeitsch. 1841) C. L. Koch (Die Pflanzenläuse, 1857), and more recently, Passerini (*Aphididæ Italicæ*, Archiv. Zool. de Modène, 1863.)

Mr. F. Smith thought that Dr. Signoret had misunderstood his remarks about the galls of the elm; the fact was that the galls in question had never been noticed in this country before 1866. Mr. M'Lachlan added that he had referred to Geoffroy, Réaumur and De Geer, not as being the only authors who had described the gall, but merely to show that, though new to this country, it had in fact been well known on the Continent for more than a century.

The Secretary exhibited a spider sent by Lord Cawdor, from Stackpole Court, Pembroke, which was pronounced by

Mr. Blackwall to be a female of *Pholcus phalangioides* (see 'Spiders of Great Britain and Ireland,' part 2, p. 208), a species which frequents the interior of old buildings in the South of England: having been preserved in the dry state, the abdomen had shrunk greatly, and this circumstance had affected the colour. Mr. Blackwall added that in the spring of 1867 he received from India a species of *Pholcus*, described as *P. Lyoni*, one specimen of which "presented the extraordinary physiological fact of the union of the two sexes in the same individual." In this gynandromorphous spider, the left side exhibited male and the right side female characters.

*February 17, 1868*,—H. W. Bates, Esq., President, in the chair.

Messrs. Linnæus Cumming and E. P. R. Curzon, both of Trinity College, Cambridge, were elected Members.

Mr. M'Lachlan exhibited a living specimen of *Lucanus Cervus*, found under ground in an earthen or clayey cocoon: Mr. Backhouse, of Teddington, digging in his garden, had turned up half a dozen of these cocoons, each containing a beetle and the remains of the skin of the larva and pupa. It thus appeared that the beetle had not gone under ground to hibernate, but the larva had descended into the earth and had there undergone the changes to pupa and imago.

Mr. A. E. Eaton remembered one or two such cocoons being dug up in the autumn, about October, in a potato-field, and these contained living stag-beetles.

Mr. Janson also had dug stag-beetles out of earth, not wood; and thought that the specimens appearing in the spring were in fact hatched in the autumn, and remained in their cocoons throughout the winter.

Mr. Stainton compared the case with that of *Cossus ligniperda*, the larva and pupa of which were specially adapted for their ordinary habitat in wood, but the larva sometimes, he believed in a state of nature, and certainly in confinement, went under ground to change, and formed for itself an earthen cocoon. There was no evidence that the larvæ of the goat-moth, which were not unfrequently found crawling about on the surface of the ground, ever re-entered a tree, and he expected that these underwent their transformation in the earth.

The President mentioned that Mr. Darwin was engaged in elaborating the subject of secondary sexual differences and sexual selection, and would be obliged by the communication of detailed observations on the numerical proportion of the sexes of insects in nature. He had numerous cases of well-authenticated numerical excess of the male over the female, and was desirous to ascertain whether in other cases a corresponding excess of the female over the male had been noticed.

Mr. M'Lachlan mentioned *Apatania Muliebris*, of which he had captured hundreds, but the male had never been seen; and *Boreus hiemalis*, of which only three or four males had been known to occur in this country. Mr. Janson mentioned *Tomicus villosus*, the female of which was almost a plague, whilst the male was hardly known. Mr. S. Stevens referred to *Drilus flavescens*, the second known British female of which was exhibited at the previous Meeting ('Entomologist,' iv. 81). Mr. F. Smith cited *Tenthredo cingulatus*, the male of which was rare, whilst the female abounded, and *Hemichroa Alni*, of which the male was quite unknown. Of the latter Mr. Smith had a large number of cocoons, and if there were such a thing as a male of that species he hoped soon to breed it.

The President remarked that the different habits of the sexes must be taken into account. Among the South-American butterflies, the males of many were more handsome than the females, and exceeded them in number in the proportion of a hundred to one; the male sported in the sunshine, whilst the female was slow in flight, never appeared in the open sun, but remained in the shade of the forest: under such circumstances it might be that a superabundance of males was necessary in order to ensure the impregnation of the females and to prevent the extinction of the species; but he was unable to suggest any explanation of an excess of females over males.

Mr. Stainton thought that, by reason of the difference of habit of the sexes, little reliance could be placed upon records of a supposed disproportion of the number of the sexes of any insect when in a state of nature: it was only by breeding the insect that the relative numbers of the sexes could be ascertained with any certainty. In Micro-Lepidoptera he

had often found the result of observations in the field at variance with the result of breeding the same species in confinement; species the females of which, from their retiring and secluded habits, were seldom caught, whilst the males were common, had, when eggs or larvæ were obtained, produced twice as many females as males.

Mr. M'Lachlan said that Mr. Darwin had recently put two queries to him, Do male dragon-flies fight with one another? and, Do many or several males follow one female? He confessed his inability to answer with certainty either of these apparently simple questions.

*March 2, 1868.*—H.W. Bates, Esq., President, in the chair.

Mr. G. A. Lebour, of the Geological Survey Office, and Captain A. F. Lendy, of Sunbury, were severally balloted for, and elected Members.

Mr. T. W. Wood mentioned that he had once opened a pupa of *Sphinx Ligustri*, and found that the haustellum was  $2\frac{1}{2}$  times as long as its case, within which it lay double throughout the entire length of the case and in a triple fold for half its length.

With reference to the numerical disproportion of the sexes of insects, Mr. Stainton mentioned that since the previous Meeting he had inquired the results of the experience of Mr. Doubleday and Mr. Hellins in breeding Micro-Lepidoptera. Mr. Doubleday thought that males were generally more numerous than females, and did not remember a single instance in which he had met with an excess of females. Mr. Hellins, on the other hand, reported that he had usually found females more numerous than males.

Mr. Stainton added that Mr. Darwin would be glad to receive replies to the following further inquiries:—(1), whether sexual attraction or fascination was exercised in the same manner by butterflies which have the wings gaily ornamented on the under side and by those which have dark under sides, as *e. g.* by *Argynnis* and *Vanessa*; (2), whether any and what moths were more brightly coloured in the male than in the female sex; and (3), whether any and what moths were more conspicuously coloured on the under side than on the upper side of the wings. (In reply to the third query, Mr. Wormald mentioned the genus *Hypopyra*). Mr.

Darwin was also desirous of acquiring facts bearing on the distinction between sexual and protective colouring in insects; and of ascertaining the causes which decided the success of one out of several males which were in pursuit of the same female.

*March 16, 1868.*—H. W. Bates, Esq., President, in the chair.

Mr. Charles Carrington, of Westwood Park, Forest Hill, was elected a Member.

Mr. Stainton directed attention to the account given by Herr Hartmann, in *Stett. Ent. Zeit.* 1868, p. 109, of the breeding of *Sesia cephaliformis*, *Grapholitha duplicana*, *Zett.* (interruptana, *H.-S.*), and *Gelechia electella*, from gall-like swellings on the twigs of juniper bushes: an examination of the juniper during the spring would probably lead to the discovery in this country of the larvæ of the two last-mentioned species.

*April 6, 1868.*—H. W. Bates, Esq., President, in the chair.

Mr. Stainton exhibited the specimen which in 1854 he had described ('*Insecta Britannica*,' iii. 47) under the name of *Nemophora Carteri*; it was formerly in the collection of the late Mr. S. Carter, of Manchester (who, however, was unable to give any account of the insect or its place of capture), and had now passed into the possession of Mr. S. Stevens. Recent examination had convinced Mr. Stainton, and the exhibition of the specimen satisfied the other Lepidopterists present, that the supposed *Nemophora Carteri* was a fabrication, made by attaching the hind wings of a *Cerostoma* to the fore wings of a *Nemophora*.

Mr. W. C. Boyd exhibited a strongly marked variety of *Stenopteryx hybridalis*, captured in Hertfordshire.

Mr. J. Jenner Weir exhibited a *Polyommatus* captured at Lewes, which he regarded as a hybrid between *P. Adonis* and *Alexis*; also varieties of *P. Corydon* and *Alexis*, with confluent spots on the under side, and a male-like female of *P. Alexis*.

Mr. F. Smith mentioned that about September, 1866, Mr. Waring Kidd had sent to the British Museum a pollard oak, which was placed in a closed case in one of the galleries, for the purpose of showing the *modus operandi* of *Cynips Kollari*. In the spring of 1866 a numerous brood of *Clytus Arietis*

appeared in the case; they were observed running about the oak-stump for about three weeks, when, unable to escape, they died, and their remains were afterwards swept away. The same thing occurred in 1867, and in 1868, on the morning of the Meeting, the *Clytus* had made its third appearance. The large quantities of camphor placed in the Museum cases did not seem to affect them, or to prevent the development of the beetle.

Mr. Janson said that camphor, though useful in preventing the entry of insects, was powerless to destroy them: at the same time he doubted whether the *Clytus* had been reproduced in the Museum; the insect probably remained in the larva state for two or three years, and it was quite possible that all the larvæ from which the successive broods of 1866, 1867 and 1868 had appeared were present in the wood on its admission into the Museum in 1865.

*May 4, 1868.*—H. T. Stainton, Esq., Vice-President, in the chair.

Mr. W. C. Boyd exhibited a number of skins of larvæ of Lepidoptera, admirably prepared by Mr. Davis, of Waltham Cross, so as to preserve both the form and colour of the caterpillars.

Mr. Trimen exhibited a crippled specimen of *Saturnia Pavonia-minor*, which, owing probably to the form and smallness of the box in which it was confined, had attempted to emerge from its cocoon tail foremost, but failing in the attempt was found fixed with its head in contiguity with the head of the pupa-skin.

Mr. F. Smith exhibited a larva which he believed to be a *Xantholinus*, found by Mr. O. Janson whilst digging in a sand bank at Snaresbrook: attached by their hinder extremities to the under side of this larva, on the 5th, 7th, 9th and 11th segments respectively, were four pupæ of a Hymenopterous parasite, probably a *Proctotrupes*.

Mr. Smith invited attention to a pamphlet by Col. Taylor on the coffee-borer of Ceylon, and read some interesting extracts:—"A very prevalent opinion exists, I believe, that the borer may come to nothing, or it may exterminate our plantations entirely. I confess that when I read of the successes and failures of various kinds of cultivation, and reflect

upon the good and bad seasons all over the globe, when I consider how many luxuriant coffee estates have for so many years succeeded in India, and moreover when I admit the undoubted fact that the red borer has been known for years on our estates and in Ceylon, I cannot regard the extraordinary visitation of 1867 in any light but that of a plague which has come upon us, and with due care and precaution on our part will pass away. . . . The borer was very destructive in 1859. His ravages in 1867 are certainly more alarming, but I believe that although this insect may remain more or less on the estates, such fatal ravages are not likely to occur for many years. It is impossible to disguise the damage already done, and doubtless this becomes a most serious question, but I trust that many an estate may yet be saved to its owners. I understand that some proprietors contemplate no further outlay, but purpose taking the coming crop, whatever it may be, and then abandoning their properties. . . . It has been advanced by some persons who take a desponding view of this calamity that the coffee estates may die out in the same manner as the vines have perished in Madeira. I think we should dismiss any idea of this kind from our minds altogether, as the cases are not analogous. The vines, it is generally admitted, perished from a disease of the trees themselves, and not from any insect. The theory that the borer only attacks weakly trees (though supported by a most eminent entomologist with regard to ligniperdous insects) is, I believe, open to question in this case. Mr. Young, the Chairman of the Carnatic Coffee Company, in writing from personal inspection, declared that 'the finest trees are its choice victims;' and I believe every planter who has seen the borer in any numbers will bear me out in the assertion that the insect is indiscriminate in its ravages. It is quite possible that men who formed a different opinion on their own estates were mistaken, and that the sickly appearance they observed was in reality caused by the borer which had entered the year before unnoticed. . . . The trees which, on passing through an estate, the planter can perceive are showing signs of something wrong should, in my opinion, be taken up, and nightly bonfires be lighted with a collection of them. . . . Some estates which have had the borer for some three or four years are nearly destroyed. If the affected trees had been burnt the



first year, I believe that such estates might have been saved to a great extent. As it is, on some estates, as many as seventeen perfect beetles have been discovered in one tree, in addition to others in the pupa state. . . . My impression is that the white borer has been in many plantations for several years, and that he goes on, maturing or expiring, according to the weather. These dry seasons have enabled him to make a great stride in his work of destruction, and the trees have become loaded with larvæ. . . . I advise the burning of all affected trees; and as it has, I believe, been almost universally admitted in Coorg and Mysore that shade is beneficial, I should plant shade in the vacancies instead of young coffee, which rarely succeeds with old plants. . . . The handling of trees for the removal of any eggs might be useful. . . . Fish-oil and soot are spoken of, to stop the trees with, and chloride-of-lime water, or arsenic solution, or cyanide of potassium, to be syringed into them. Of all preventive and remedial measures as yet proposed, I consider the most valuable to be the plan of whitewashing the trees, when good lime can be procured. Fires should invariably be lighted at this season, because it appears that the borer beetle escapes at night, and during this month (September). At the same time it is probable the beetle may escape during the daytime also. It has the power of boring its way out of the tree after it has changed from the pupa to the perfect beetle, notwithstanding that it may have to open a considerable aperture for the egress of its body. It is, in fact, furnished with a boring apparatus as effective in its purposes, though not of the same description, as that of the larva. This was exemplified in an experiment made by Captain Mitchell, of the Madras Museum, and myself. A portion of a coffee tree which we split up (brought from Coorg about ten days before) disclosed a beetle in a cleft of the tree, which proved afterwards to be a female. She appeared to have no inclination to escape, though she could easily have done so. She was comfortable and apparently torpid in her hole. We tied up the piece of the tree tightly, and Captain Mitchell placed it in a glass bottle with a stopper. In the morning he examined it, and found the beetle outside the wood, lively, and running up and down in a wonderfully active manner, feeling about with her antennæ as busily as possible. On examination of the piece of the

tree, we found that during the night this insect had bored a large hole outwards, and had come out of the bark from the position in which we first discovered her. . . . It is doubtful whether the beetles will fly into the fire, though they will come round it in great numbers, in which case coolies with nets or branches of trees might kill a great many. . . . Can we introduce or encourage the breed of any animals inimical to insect life? Can the ornithologist be of any service here? Those birds which live chiefly in trees and hedges, if encouraged and protected on an estate, might prove formidable enemies to the borer. Flocks of guinea-fowls would kill a large number of insects; . . . they are mostly attached to white ants and grubs, but this borer is a very diminutive insect considering his powers of destruction, and I have no doubt the guinea-fowl would take to him amazingly. . . . Is it the case that, after two or more seasons of failure in the average amount of rain, the coffee trees become to a certain extent sapless, and offer an easy prey to ligniperdous insects of all kinds? I have stated before that this is open to question, but it has been asserted that such is the case, and that when the trees are luxuriant, and from constant showers in seasonable and heavy monsoons they have become in a high state of cultivation and are full of sap, the borer cannot make so much way in his depredations; he is, in fact, bothered (so to speak) by too much moisture in the wood. There are doubtless various kinds of borers, some of which have actually attacked this year the sandal-wood, whose scent it was supposed would scare the hungriest larvæ; some again have attacked dried-up and utterly sapless trunks, in whose fibrous elements not a particle of nourishment could be supposed to dwell. . . . It is important to discover if a juicy or a sapless coffee bush is selected by the borer, and, if so, by what borer. . . . I believe that the white or red borer was originally indiscriminate in his attacks, either in shade or the open. I believe that the spread of insects has greatly increased by the absence of shelter for the birds of the forest." . . .

[I have been favoured by Mr. Lee, of 'Land and Water,' with specimens of the borer in its perfect state, and find it to be a *Clytus*, very nearly allied to our *Clytus Arietis*. I observe that Mr. Smith thinks it to be the *Xylotrechus quadripes*

of Chevrolat, *Xylotrechus* being a recent generic name for the division of *Clytus* which has this peculiar ornamentation.—*E. Newman.*]

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*Description of the Larva of Triphæna interjecta.*—It rests in a straight position on the stems of its food plant, and when shaken or annoyed it falls to the ground rolled in a ring, but very soon resumes the straight position and crawls with rapidity: the head is narrower than the second segment, into which it is partially received; it is porrected, flat, rather glabrous, and not notched on the crown; the body is obese, rather velvety, the divisions of the segments strongly marked; it is somewhat attenuated at the anterior extremity, and has the twelfth segment dorsally slightly swollen. The prevailing colour of both head and body is putty-colour; the head has two dark brown marks down the face, and outside of each of these is a pale mark; the body has a narrow medio-dorsal white stripe, bordered on each side by brown slightly darker than the ground colour; near the medio-dorsal on each side is another narrow white stripe similarly bordered, and differing only in being somewhat less distinct; on each side in the region of the spiracles, but just above them, is a broader and triple stripe, the outer portion on each side being whitish, the middle reddish; and this compound stripe is also bordered with brown, particularly on its upper margin; the dorsal area is ornamented with a number of intensely black dots; on the second segment these are very minute and apparently without much arrangement; on the third they form a straight transverse series and are eight in number; on the fourth they also form a straight series and are six in number; on the following segments, the fifth to the eleventh both inclusive, they are also six in number on each segment, but no longer form a straight series; two near the anterior margin of the segment are larger than the rest, the next on each side stands back about the middle on the dorsal area of the segments, and the third on each side is nearer the anterior margin; the twelfth segment has four of these black dots arranged in a perfect square; the ventral is slightly darker than the dorsal area, and has a double series of black dots below the compound lateral stripe. The legs are pale, semitransparent

and shining; the claspers are semitransparent, and each has a distinct black dot and a crescentic black mark above it: in the interspaces between the stripes which I have described there is a further indication of stripes, but these are very inconspicuous. I am indebted to my kind friend Mr. Doubleday for the opportunity of describing this larva.—  
*Edward Newman.*

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*Entomological Notes, Captures, &c.*

*Vanessa Antiopa.*—I have just come into possession of five specimens of *Vanessa Antiopa*, taken in a garden in this neighbourhood last autumn. — *Linneus Cumming; Trinity College, Cambridge, March 25, 1868.*

*The Early Spring.* — On May 1st I noticed amongst the garlands of the children abundant evidence of May-flower, a thing which has been well nigh impossible to occur so early in past years. Again, on May 1st, on visiting some woods, more for the purpose of exploration than of collecting, I captured *A. Euphrosyne*, *T. Tages* and *T. Rubi*; and on the 8th *N. Lucina*, *T. Alveolus*, and many Geometers of divers kinds: on both days the pretty little *A. viridella* was flying by hundreds in the sun round oak saplings and other trees. None of these last year were seen, so far as I know, till quite the last week or ten days of May. — (*Rev.*) *H. J. White; Steyning, Sussex, May 12, 1868.*

*The Early Spring.* — I have had several specimens of *A. Menthastris* emerge from the pupæ, the first of which came out on the 29th of April; also three specimees of *S. Tiliæ* during the past week. This morning a female of *A. mendica* was captured in our cellar. The larva of *A. potatoaria* is very plentiful this spring in our neighbourhood. — *C. J. Watkins; Painswick, Gloucestershire, May 11, 1868.*

*The Early Spring.* — With reference to this it must be borne in mind that many of the larvæ crawl into greenhouses, &c., and are perhaps somewhat "forced." I saw one in my own greenhouse this year in March, just emerged from the pupa, and have a note of one seen in 1864 in a greenhouse quite a fortnight earlier than I saw one out-of-doors. — *N. C. Tuely; Wimbledon Park, May 8, 1869.*

*Gonepteryx Rhamni ovipositing.*—I watched with much interest the other day a female depositing her eggs. The food-plant (*Rhamnus Frangula*) grew in a thicket mixed with hazel and honeysuckle, and she as often settled on these as on the *Rhamnus*, sometimes appearing to me to bend her body as if about to deposit an egg, never however actually placing one on the wrong plant. As the butterfly never seemed sure she was right until after settling, I presume they must be finally guided by some other sense than sight in choosing the proper food-plant.—*N. C. Tuely.*

*Gonepteryx Rhamni in Scotland.*—In all works on British butterflies that I have seen it is mentioned that *Gonepteryx Rhamni* has never occurred in Scotland: perhaps you are not aware that a specimen was once seen on this side of the border by Sir William Jardine, I believe in Dumfriesshire.—*Wm. Douglas Robinson; May 8, 1868.*

*Argynnis Lathonia at Brighton.*—Having lately arranged a collection of butterflies and moths which I have been making for some years, I find I have in my possession two specimens of what I think, from your description and engraving, there can be no doubt is the Queen of Spain fritillary. They must have been caught, about three or four years ago, at Brighton. I do not know at what time of the year they were caught.—*Edwin Hellard; 132, High Street, Portsmouth, May 11, 1868.*

*White Specimen of Polyommatus Phlæas.*—On May 19th a friend of mine took a most curious variety of *P. Phlæas*, the part which is usually of a bright copper-colour being of a splendid silvery white; it is also a very large specimen. I should be glad if you would tell me whether it is a variety which often occurs or not.—*W. Clark; Doncaster.*

*Note on the Cannibalism of Chelonia caja larvæ.*—Not remembering to have seen a notice of any tendency towards cannibalism in the larvæ of *Chelonia caja*, I send the following note, thinking it may perhaps interest some of the readers of the 'Entomologist.' At the end of last autumn I had a batch of eggs of *C. caja*, and determined to try the effect of rearing the larvæ in the dark. I placed the eggs in a closed box, and, when hatched, fed up the larvæ as quickly as possible, never allowing them to see the light. I was surprised to find that they did not all grow at a uniform

rate, although kept in the same box and fed on the same food; some grew very slowly, and when about five lines long left of feeding, evidently preparing to hibernate; the others grew very rapidly, and upon attaining the full size (which they did at the beginning of December) about half of them changed to pupæ, the rest, like the small ones, settling themselves quietly down for their winter's sleep. From time to time I placed fresh food in the box, but they did not move till the second week in February, when some got restless; however, they would not feed, and only just nibbled the ends of the food. The first week in March, not having given them fresh food for two or three days, I examined the box carefully, and was astonished to find but two larvæ alive; of the others there remained only the hairs and a few headless and mangled bodies. As for the pupæ, their shells alone showed what had been: these cannibals had, commencing at the heads, cleared out the bodies of every one of them. The two survivors, I suppose, had been having a desperate duel, both of them being somewhat torpid and very weak. I tried my best to rear them, but failed, as they refused to turn vegetarians: and so both, much to my annoyance, slowly and miserably died. Such bloodthirsty larvæ ought to have produced remarkable "tigers." — *Jas. A. Forster*; 38, *Skinner Street, Clerkenwell, May 14, 1868.*

*Acronycta Alni.* — In August last I found a caterpillar of this species feeding on oak; after coming to its full size it spun up, and from the pupa there emerged, on the 2nd inst., a magnificent male specimen of the perfect insect. This is the first record of the species, as far as I am aware, in this neighbourhood. — *O. P.-Cambridge*; *May 4, 1868.*

*Deilephila lineata at Plymouth.* — Last year three or four specimens of *Sphinx lineata* were taken in the neighbourhood of Plymouth (one in my own garden), and during the last few weeks another has been captured. A female of last year laid eggs, from which many caterpillars were produced. They were fed on vine-leaves, but unfortunately died after attaining a good size. I saw all the moths myself, but not the larvæ, which I am told were of a purple colour. Another of these moths was captured in the same locality the year before. — *J. Gatcombe*; 8, *Lower Durnford Street, Stonehouse, Devon, May 12, 1868.*

# THE ENTOMOLOGIST.

No. 55.]

JULY, MDCCCLXVIII.

[PRICE 6D.

*Description of the Larva of Timandra amataria.* — Rests in a somewhat bent position; the back slightly arched; the three anterior segments bent at an obtuse angle with the arched back, and directed upwards; the head prone and closely tucked in, the mouth coming in contact with the first pair of legs: when touched or otherwise annoyed, it falls from its food-plant, bent nearly double, and remains perfectly motionless, as though dead, for many minutes: the head is small, but of nearly equal width with the 2nd segment; the 2nd and 3rd segments are small, flattish, and somewhat quadrate; the 5th segment is much swollen and laterally dilated, and as the larva stands semi-erect, attached by its claspers only, its appearance with this dilated neck, if we may so call it, reminds one of the figure of the cobra when irritated; all the remaining segments are slightly swollen at the sides, and restricted at the incisures; the skin is slightly folded transversely, but this folding is neither so marked nor so regular as is generally the case in the larvæ of the genus *Acidalia*; it is most observable on the 2nd and 3rd segments and on the posterior half of the other segments: there are no anal points, but the anal claspers are rather large and decidedly spreading. The colour of both head and body is umber-brown variegated with lighter brown; the head is pale and reticulated down the middle of the face, but on each cheek is a still paler as well as a darker mark: these markings on the head are continuous with the dorsal ornamentation of the body, which consists, *first*, of a pale medio-dorsal and rather narrow stripe, intersected throughout by a darker line; and, *secondly*, of four very conspicuous lozenges, seated respectively on the 6th, 7th, 8th and 9th segments; each of these is pointed at its anterior, but abruptly truncate at its posterior, extremity; the medio-dorsal stripe passes through all these; each of these segments has a pale, almost white, lateral mark below the lozenge, and these lateral

marks unite in forming a sinuous and imperfectly connected lateral stripe, which is seated on a slightly dilated skinfold: viewed laterally the larva seems transversely striped with pale oblique lines, the last of which on each side terminates in an anal clasper; the ventral is darker than the dorsal area, and has four narrow stripes extending from the legs to the ventral claspers; these stripes are dark brown, but divided and bordered by a paler brown; the dilated 5th segment is as conspicuous when viewed from below as from above: the legs and claspers have the same tints of colour as the body. —*Edward Newman.*

*Description of the Larva of Eupithecia consignata.* — Towards the beginning of May, Mrs. Hutchinson, of Grantsfield, kindly sent me seven eggs of *Eupithecia consignata*, laid by a female taken in Herefordshire by her youngest daughter. All the eggs hatched, and I have reared six larvæ, which have spun up during the last few days. I have great pleasure in giving a description of this hitherto almost unknown larva:—Long, slender, tapering slightly towards the head. Ground colour dark grass-green, slightly tinged with yellow. Segmental divisions yellowish. Central dorsal line very slender, dark purplish, enlarged at the base of each segment into a large spearhead-shaped blotch. These blotches become confluent on the capital and caudal segments, and are slightly bordered with yellow. Head somewhat broad, green slightly marked with purplish red. Spiracular line puffed, rather paler green than the rest of the body; blotched with purplish red on a few of the central segments, and more or less edged with straw-colour. Central ventral line whitish. Body somewhat wrinkled, and sparingly studded with a few short slender whitish hairs. Fed on leaves of apple. Full-fed June 11th—17th. Some years since I beat two of these larvæ from oak in Suffolk, and one from hazel in Hampshire. I suspected at the time that they were the larvæ of *E. consignata*, but as they died in the pupa state I was unable to verify my suspicion. This larva closely resembles that of *E. exiguata*. — (Rev.) *H. Harpur Crewe; Drayton-Beauchamp, Tring, June 17, 1868.*

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*Entomological Notes, Captures, &c.*

*Captures at Howth.*—Whilst at Howth this week, in the company of Mr. W. F. Kirby, he took a specimen of *Dianthœcia conspersa*. The capture is interesting, as the claim of this species to a place in the Irish list of Lepidoptera previously rested on a single specimen, of uncertain origin, in the Belfast Museum. At page 349 of the 'Entomologist' it was suggested that *Dianthœcia Barrettii* was possibly only a melanic form of *D. conspersa*: a final decision of this point must wait for the discovery of the larva of *Barrettii*, but the occurrence of *Conspersa* of the usual colour, on the same ground as *Barrettii*, appears to me to strengthen the probability of the existence of a specific difference between the two insects. I again had the pleasure of capturing *D. Barrettii* and *D. capsophila* (the latter in all stages of growth), also larvæ of *Lithosia complana* and *caniola*. *Chærocampa Porcellus* and *Hepialus velleda* were very common at the flowers of the honeysuckle, and of *Cucullia Chamomillæ* a few specimens were taken, also the six following *Eupitheciæ*:—*Venosata*, *constrictata*, *subumbrata*, *pumilata*, *nanata*, *vulgata*.—*Edwin Birchall; Airedale Cliff, Newlay, Leeds, June 19, 1868.*

*Dianthœcia Barrettii.*—Mr. Birchall's observation on this species induces me to mention that Mr. Charles Fenn has most obligingly brought me, to be figured in my 'British Moths,' a bred specimen of *Dianthœcia conspersa*, which agrees perfectly with Mr. Doubleday's description of *D. Barrettii*; others, of the usual colouring, came from the same batch of larvæ: thus it would appear that the two types of colouring, races, varieties or species, as the case may be, do occur on the same ground.—*E. Newman.*

*Dianthœcia Barrettii at Howth.*—A storm of wind, rain and fog, confined me to the house to-day, and therefore to pass the time I thought I would write a line to say how sadly you are out of your usual correct reckoning, in your remarks on *Dianthœcia Barrettii*, when you compare it with *D. conspersa*, on your melanism theory. Three weeks ago I saw this species for the first time in the Dublin collection; there are five poor specimens: on that same night I had three specimens on my setting-boards, one taken by Mr. Hodgkinson

and two by myself: these also were poor comparatively; but the species is such a large one that any comparison with *D. conspersa* is out of the question, and its colours so distinct and its markings so absolutely unlike it that how the idea of the possibility of their being identical got abroad I cannot conceive: it is true that since then I have taken a specimen scarcely larger than *D. conspersa*, and so worn that it might be supposed to be like any other species of its size and in the same worn condition, but that is all that can be said about it. It seems to me that none but poor worn specimens have reached London; but I am sure you will be pleased to hear that by perseverance, even though late for it, I have succeeded in capturing five good specimens, an account of which I will send you for publication. When I say they are like small *Atriplicis* with the green of it replaced by rich chocolate-brown, the whole insect woolly, and the scales so fugitive that it is almost impossible to set it without injury, you will have a tolerable idea of its size and the difficulty of getting good specimens. If you can conceive a specimen of *M. Oxyacanthæ* with brown distinct *chocolate* markings instead of green, then you see *Barrettii* as it should be.—  
*C. S. Gregson; Howth, Ireland, June 21, 1868.*

*Singular Occurrence with a Larva of Liparis monacha.*—  
On the 14th of the present month, at Darenth Wood, Kent, I picked off the trunk of a young oak tree a nearly full-grown larva of *Liparis monacha*, and on the following morning I placed it, with another I had feeding, in a white glazed jar (commonly used for jams), and two days afterwards, while cleaning out my larvæ-jar, as I usually do, and taking this one in its turn, I was surprised to find this larva in a very violent state of commotion, and reduced to about a third of its size, and still more surprised to find two wire-worms, or they might be termed cotton-worms, alive at the bottom of the jar, and alongside the *monacha* larva, so curled that they occupied but a small space, and doubtless, from appearance, had not long been ejected. Their colour was of a yellowish white, and quite plain. On arriving at home the same day I found both worms dead and stiff, and the larva with but little symptoms of life left. I put the dead worms into cold water, which caused them to relax and uncurl very quickly, and to come out quite straight. I took a carpenter's foot-rule, and

found one to measure ten inches in length, and the other eight inches and a half; I should think their thickness is about that of coarse white or black thread. I am rather anxious to know, through the 'Entomologist,' if a similar circumstance with larvæ has ever been recorded before. I have reserved both worms and the monacha larva. — *F. O. Standish*; 2, *Alfred Cottages, Warner Road, Camberwell, S.E., June, 1868.*

*Capture of Notodonta trepida at night.*—While in search of night larvæ in Darenth Wood, on the 9th of May, I had the pleasure of taking a fine male of *Notodonta trepida* expanding its wings on the stem of a young oak.—*Id.*

*Tæniocampa miniosa bred.*—I have bred a fine lot of this pretty species from very young larvæ taken off oak last year, feeding in a nest of two or three hundred, in the same way as the young larvæ of *Eriogaster lanestris* and *Bombyx neustria* do.—*Id.*

*Eupœcilia subroseana.*—I have taken a very fine series of this species, which is often represented by *E. ruficiliana*, but is positively distinct from that species.—*Id.*

*Stauropus Fagi.*—On the 31st of May I captured a male *Stauropus Fagi* at Leith Hill, and on the 7th of June a female at Darenth Wood (the latter laid a few eggs, and I have now the larvæ feeding); also, on the 14th, at Darenth Wood, a very fine male; my friend Mr. Dow also took a magnificent female on the same day. Although I have been collecting for upwards of twenty years, I had previously only taken one specimen.—*Id.*

*Larva of Polia nigrocincta in the Isle of Man.*—I have again, this day, had the pleasure of taking the larva of *Polia nigrocincta* in the Isle of Man.—*Noah Greening*; *Isle of Man, June 19, 1868.*

*To destroy Weevils in Maize.*—A friend of mine in Queensland wishes to know how or by what means he can destroy the weevils, which are very destructive to his maize. If you would insert this in your next number, I shall esteem it a favour.—*Joseph Leigh*; 27, *Tomlinson Street, Hulme, Manchester, June 12, 1868.*

[I am sorry not to be able to offer any advice: I do not even know what insect is called the weevil in Queensland.—*E. Newman.*]

*Eggs of Scoria dealbata.* — Mr. Jeffrey, so well known for his discovery of the life-history of *Dasypolia Templi*, has just returned from Ashford, in Kent, where he has had an opportunity of studying the habits of *Scoria dealbata*, now on the wing: this species is diurnal in its flight, and he watched the female laying her eggs on the stems and leaves of grasses; the species generally selected for this purpose appears to be *Brachypodium sylvaticum*, and the eggs are laid lengthwise, sometimes singly, but more often four, five, six, or even seven, placed end to end, and adhering to each other in a necklace or chain form; their shape is that of a brick with rounded corners, and having a deep and wide depression on the upper and under surface; there is also a smaller concavity at one end; the colour when first laid is pale ochreous, becoming deeper yellow and even orange before many days. I mistook this orange-colour for the original colour when deposited, and so described it both in the 'Entomologist' and 'British Moths,' but now find this was a mistake, which I hasten to rectify.—*E. Newman.*

*Cheimatobia brumata (The Winter Moth).* — An opinion prevails among gardeners that some of the less mature winter moths remain in the ground till spring, and then come forth and deposit eggs. Can any of your readers inform me if this is the case? My plantations were watched every third or fourth night through April and part of March, and none discovered. Last year I tried, on rather a large scale, if digging round and among fruit trees in July and August would lessen the number of winter moths, by disturbing the pupæ in their earth chambers, exposing them to birds and insects, and to too much or too little moisture; but the portions of the plantation so treated have been as much infested with the caterpillar as the portions dug in the winter.—*R. Varden; Seaford Grange, near Pershore, June 10, 1868.*

*Erastria venustula in Epping Forest.* — While collecting in Epping Forest on May 27th, I captured a few fine specimens of *Erastria venustula*. — *A. Woodage; 9, East Street, Goldsmith Row, Hackney Road, N.E.*

*Larvæ of Bombyx castrensis.* — I send you this morning, by our messenger, a few larvæ of *B. castrensis*. For the last two years I have been very successful in rearing them in my garden on the chrysanthemums. I cover the plant with a

muslin net, and take no further trouble until they are spun up, when I clip off the cocoons and put them in a breeding-cage. The moths come out in the afternoon, and must be secured before dark, or they will batter themselves to pieces.

—*D. T. Button.*

[Many thanks for the larvæ, which arrived in safety; many thanks also for the long letter on entomologising by the river, but it must stand over at this late period of the month.—*E. Newman.*]

*Chortobius Davus and Monster Ichneumon in Co. Westmeath.*—On the 11th of June my children brought me four of the finest specimens of *Chortobius Davus* I ever saw; and I have had what appears to me a monster ichneumon come out in one of my breeding-cages: it measures from the tips of the antennæ to the extremity of the hind claws two inches and a quarter.—*F. J. Battersby; Cromlyn, Rathowen, June, 1868.*

*Galls on Salix herbacea.*—It will be in the recollection of most of my readers that in the September number Mr. Lees and the late Mr. Armistead conjointly published a most interesting discovery of small currant-like galls on the leaves of *Salix herbacea*, with a request that I would name “the fabricator of the galls.” I could not do so at the time, but have since detected the architect: it is *Euura Cynips*, one of the *Tenthredinidæ* described by myself in the ‘*Entomological Magazine*’ (vol. iv. p. 260): the species is generally distributed over Britain, and makes its presence known by the shining and often beautifully coloured excrescences which its larvæ cause on the leaves of almost every species of willow.—*E. Newman.*

*Cedar-wood Cabinets.*—I have taken the liberty to send you a specimen of a curious and very troublesome appearance of glutinous matter which has for some years past shown itself upon shells, both fresh-water and sea-shells, and also upon land-shells, placed in the drawers of a cabinet here. The drawers are of cedar, and this oily, sticky matter has come upon all the shells, and also upon the legs and claws of bird-skins which are in the same cabinet. The cedar is perfectly dry and seasoned, the cabinet being now quite ten years’ old, and made of seasoned wood; it stands in a dry room, where there is a fire during eight months out of the twelve.

It is curious that while the legs of the birds have become coated with the matter, the bills have not been affected. In the drawers are a few pieces of camphor and some bitter-apple to keep off moths, nothing else. If you or some of the readers of the 'Entomologist' can recommend a remedy I shall feel much obliged.— *Clermont; Ravensdale Park, Newry, March 28, 1868.*

[The substance sent is a resinous exudation of cedar, which I believe can never be got rid of. I have answered Lord Clermont's inquiry in course of post, but the subject is one of such vital importance that I thus notice it publicly, in the hope that it may save some of my readers from the ruinous sacrifice inevitably entailed on the possessor of a cedar-wood cabinet.—*Edward Newman.*]

*Management of Pupæ.*—I shall feel greatly obliged if you will kindly answer the following questions in the July number of the 'Entomologist':—Is it necessary to keep pupæ in wet sand? I have never done so; nevertheless I have been specially fortunate in not having many cripples? Is it desirable to keep the larvæ of different Lepidoptera in separate cages? And will you kindly specify the kind of gauze to which you allude in your interesting Butterfly Number of 'Young England'?—the caterpillars gnaw most determinedly that which I have used, thereby often effecting their escape. Is it preferable to keep the cages in the open air? On more than one occasion a drop of water has revived an apparently dying caterpillar: would it be well to sprinkle the cages and food with water daily?—(*Miss E. Newman; West-End House, Uxbridge, June 1, 1868.*)

[I have never kept pupæ in damp sand, or indeed in sand of any kind, as it is almost certain to become mouldy on the surface, the mould frequently extending to the pupæ and eventually destroying them. I use the catkins of the birch rubbed into separate scales, and mixed with light peat earth or Sphagnum, which seems rarely if ever to get mouldy. I recommend most decidedly that each species of larva should be kept separate. The gauze or lens used to cover the cylinders in which larvæ are kept is of no particular kind. It is now almost invariably stretched over the top of the glass cylinder, and gummed or pasted tightly down; the larvæ can only reach it by climbing the glass, which I have scarcely

ever known them attempt. I find that all larvæ do best in the open air, but it is not always easy to manage this. A greenhouse or conservatory, or tool-shed with free ventilation, is a very suitable place. I do not recommend sprinkling the food.—*Edward Newman.*]

*Breeding Smerinthus ocellatus.*— I am anxious to bring up some larvæ of *S. ocellatus* which I have just had hatched. If you could inform me of any mode of doing so I should be extremely obliged. I had some last year, which I fed on common willow and apple, but they all died.—*Edward F. Bisshopp; Albert College, Framlingham, June 4, 1868.*

[I have never found the least difficulty in rearing *Smerinthus ocellatus*. I believe it is common to take too much care, as for instance to change them too often, and perhaps handle them too much. I have often kept this species in a large garden-pot half-full of earth, giving them *Salix fragilis* (common willow) as food, which I stick in a small phial filled with water and buried up to the neck in the earth; over the pot may be laid a square piece of glass, or gauze, or muslin of any kind, kept on by an elastic ring of vulcanized India-rubber.—*Edward Newman.*]

*Abundance of Bombyx neustria.*— I do not know whether the extensive appearance of *Bombyx neustria* in South-west Middlesex has come to your knowledge. In the neighbourhood of Hounslow and Harlington their depredations have been so extensive that among the market gardeners very considerable alarm existed lest the trees should be so stripped of their foliage as to materially injure the fruit. It may be worthy of notice that they are far more plentiful on the better kinds of fruit trees, such as quarendens, king of pippins, and hawthorn deans. Many thousands have been destroyed by shooting them with a mixture of sand and gunpowder. It appears to be very local, infesting every tree in one parish, while the adjoining parish remains perfectly free. Can any means be suggested for destroying the eggs, which it seems certain will be laid this autumn? It is scarcely possible that the pretty bracelets will be discernible to any but an experienced eye, certainly not to the uninitiated on whom the search over so many acres must devolve: it tempts one to wish that the male lacquey alone rejoiced in the winged state. We are told that frost and snow do not injure the

eggs, but is it not probable that their unwonted prevalence this summer may be owing to the mild winter and dry spring? —(Miss) *E. Newman*; *West-End House, Uxbridge, June 1.*

[The intermittent appearance of this insect is very curious: ten years ago, and *ante*, the few apple trees I possess were annually devastated by it, but since that period not a single specimen has been seen, and its destructive mission appears to have devolved on *Yponomeuta padella*, which now strips every apple tree of its foliage, and leaves it as bare as at mid-winter: this year *Bombyx neustria* is again swarming in my neighbourhood, although I have not seen a single larva in my own garden. As to a remedy for this plague of lacquey caterpillars, I am unable to suggest a better than shaking the boughs where they are observed feeding, picking them up as they fall limp and helpless on the ground, collecting them in buckets and pouring hot water on them.—*E. Newman.*]

*Cannibalism of the Larva of Chelonia caja.* — The note on the cannibalism of *Chelonia caja* larvæ, in the June number of the 'Entomologist,' reminds me of a similar although less disastrous circumstance occurring last season in my cage appropriated to *C. caja* larvæ. One caterpillar had made its web, when another effected an ingress, and a sharp contest ensued, resulting in the ejection of the first tenant. All its long hairs were stripped off, and it was in a pitiably weakened condition. In a short time it changed to a pupa, without any protection: it was immediately attacked by three or four large caterpillars, and, although I took it out of the cage directly, no moth emerged. I had a brood of *C. caja* which I reared from the egg, and they hybernated in November, but they all died. Perhaps I should have had a cage to which the air had free access? —(Miss) *E. Newman*; *West-End House, Uxbridge, June 1, 1866.*

[I have always found that hybernating larvæ cannot be too much exposed to the action of the elements; I believe it next to impossible to breed *Bombyx Rubi*, for instance, without full exposure to wind and rain.—*Edward Newman.*

*Notes on Lycæna Arion.* — This rare species still remains an enigma to the entomologist in its early stages. It is not until it has assumed the winged condition that it gladdens the eyes of the anxious collector, as it flies majestically along over the broken and stony surface of the wind-blown hills



which it has made its home. It would seem it is only a very few places in England that it thus favours with its presence ; and it does not appear to have been found on the Continent in any abundance. Several years ago I found the species sparsely distributed on the Cotswold Hills, and it was found by others on other portions of the same range ; but from some localities in which it was found it has since disappeared. Last year several specimens were taken by my friend Mr. Marsden, of Gloucester, in the same neighbourhood in which I had taken it ; and this year I was fortunate enough to capture eleven specimens, and Mr. Marsden has taken still more. Owing to the forwardness of the season generally for insects, it became a nice point for calculation when to look for this rarity with the prospect of finding it. It is generally due from the 14th to the 20th of June ; but this year I took the first eleven specimens on the 6th of June. Most of them were in good order, though one or two had evidently been out some days. There was a strong wind blowing, as there generally is on the exposed places occupied by *L. Arion* ; and doubtless this tends to quickly damage the delicate plumage ; the spot most frequented by them was, however, partly sheltered by a stone wall. They were taken in company with *L. Alexis*, which often seemed to take a pleasure in following and flying round its not very "big brother." The same locality subsequently yielded as many as were taken on the first day, while all the district round about, though much of it is of the same character, was perfectly clear of them. This tends to show that the species is very local in its habitat. On another spot some miles distant, but of a similar broken character, the species was also found, the area, however, being still more contracted. The ground in both cases consists of deserted quarries, from which broken stone has been taken, the sides of the quarries being left sloping, and thick grass, with the usual herbage of hills, growing near. This herbage includes wild thyme, sun cistus, wild geranium, wild forget-me-not, milkwort, yellow trefoil, and several species of coarse grass. Among those I captured were a fine pair *in cop.*, resting on the forget-me-not ; but no eggs have been obtained.—*J. Merrin ; Gloucester, June 16.*

*The Large Wasps.*—This spring there has been an unusually large number of the large wasps about here, and I

am anxious to know whether it is a fact that these are females? My observations would lead me to think they are males, and not, as is commonly supposed, females. Frequently I have noticed a great many of them early in the year, as is the case this year; and yet wasps' nests have not always been abundant in the same years that these (supposed) females or queen wasps have abounded. Can you enlighten me on the subject?—*James Murton; Silverdale, Lancaster, June 5.*

[I have examined a considerable number of the large wasps found in spring, and have always found them to be females; but in the presence of my able correspondent Mr. Smith I hesitate to pronounce with editorial authority that this is invariably the case: will Mr. Smith kindly inform us?—*E. N.*]

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#### *Obituary.*

*Death of Mr. John Chant.*—Mr. Chant and his colleague Mr. Bentley were among my first entomological acquaintances; and all the older entomologists now living may be reckoned to have made their entomological *debut* under the auspices of these veterans of our science: on my very first visit to Darenth Wood I well recollect meeting the elder Standish, whose good opinion I cannot say I lost, but I certainly never obtained, from two facts which Mr. Standish very soon learned of me; *first*, that I collected "Clear-wings," meaning Hymenoptera; and, *secondly*, that I was unacquainted with "Chant and Bentley:" the latter delinquency I soon overcame, and was a weekly visitor at their Thursday evening *réunions* for many years; the first, the weakness for "Clear-wings," I have never completely conquered. Mr. Chant became a contributor to my 'Entomological Magazine' about the same period, 1832—36, but his communications were few in number and were soon altogether discontinued. Mr. Chant died in September, 1867, but I cannot ascertain his exact age: he devoted his spare time of later years to re-setting insects for the British Museum and for Mr. Saunders: his collections, consisting of three small cabinets of British Lepidoptera, were sold by Mr. Stevens on the 24th of April last; and two of the insects, *Sesia asiliformis* (the true *Sphinx Vespiformis* of Linneus) and *Sesia allantiformis* (the type-specimen described by myself), fetched the extra-

ordinary sum of £5 10s. each ; Mr. Evans, of Darley Abbey, Derbyshire, being the purchaser. The collection and books realized together between £80 and £90.—*E. Newman.*

*Death of Charles Turner.*—Charles Turner died in King's College, Hospital, during May, 1868, in the 60th year of his age. He belonged to a class of men to whose industry and acquired knowledge the scientific entomologist is greatly indebted. Of collectors Turner was perhaps in every way the one whose loss will be most felt by entomologists, if we attempt to give a short list of his most important discoveries and captures. Collectors of tact and intelligence are few in number, and no one I have known could so perseveringly, and usually so successfully, carry out investigations, aided simply by a few hints and suggestions : he had also a most accurate eye ; the form of an insect once submitted to him as a species of rarity, and therefore worth his searching for, seemed to be indelibly impressed upon his memory ; the rough notes he took of such species, intelligible to himself only, always seemed to guide him aright in his undertakings. The following list of his discoveries will necessarily prove to be incomplete, because he no doubt disposed of rarities, or of species new to our lists, to entomologists with whose collections I am unacquainted. I will first mention those he was the discoverer of :—*Synchita mediolanensis*, *Endophlœus spinulosus*, *Athous undulatus*, *Telephorus scoticus*, *T. paludosus*, *T. elongatus*, *Anobium nigrinum*, *Rhopalodontus perforatus*, *Brachonyx indigena*, *Cryphalus Tiliæ*, *Donacia aquatica*, *Zeugophora Turneri* : here we have a dozen species added to the British list. His rediscoveries were much more extensive ; single examples only of several existed in collections, or were only recorded to have done so by Stephens and others :—*Agabus brunneus*, *Quedius dilatatus*, *Sphærites glabratus*, *Rhyzophagus nitidulus*, *Colydium elongatum*, *Oxylæmus variolosus*, *Dendrophagus crenatus*, *Anthaxia nitidula*, *Agrilus sinuatus*, *Microrhagus pygmæus*, *Elater tristis*, *E. rufitarsis*, *E. tibialis*, *Hylecœtus dermestoides*, *Anobium denticolle*, *Haplecnemus* ——— ? *Platydemia violaceum*, *Tetratoma ancora*, *Orchesia undulata*, *Dircæa lævigata*, *Phlæotrya rufipes*, *Melandrya canaliculata*, *Conopalpus Vigorsii*, *Pyrochroa pectinicornis*, *Tomoxia biguttata*, *Asclera sanguinicollis*, *Rhinomacer attelaboides*,

*Barynotus Schönheri*, *Pissodes notatus*, *Anthonomus varians*, *Tychius quinquepunctatus*, *Scolytus Ratzeburgii*, *Tomicus dispar*, *T. dryographicus*, *Strangalia aurulenta*. Many of these insects have no doubt been taken by Dr. Power and others,—*Pissodes Pini* I have just found at Bournemouth,—but Charles Turner led the way, and our collections have been enriched by his industry. This class of men all possess a love for Natural History; they are content to labour for small gains, and must at times feel keenly the privations which their calling naturally subjects them to; they are usually poor, and content with little; and such was the life of Charles Turner after he once became a collector of insects.—*Frederick Smith.*

*Death of Mr. Thomas Desvignes.*—Mr. Desvignes died at his residence at Woodford, in Essex, on the 11th of May, 1868, in the fifty-sixth year of his age. He was well-known as a laborious student of that difficult group of insects the Ichneumonidæ, and his collection of these insects was by far the most complete of any hitherto formed of the British species: I am pleased to know that it is likely to find a home in our National Museum. Entomologists have much reason to regret that the vast amount of knowledge acquired by Mr. Desvignes during twenty years' study has never been published, and therefore dies with its possessor, the 'Catalogue of the British Ichneumonidæ in the British Museum' being the only connected work he ever published on the subject. In earlier life Mr. Desvignes devoted great attention to the formation of a collection of British Peroneæ, and published a short paper on the genus in the 'Zoologist' for 1840: in this he arranges the fifty named forms or varieties in two groups, *Peronea spuria* and *P. vera*; of the latter, which corresponds with our *P. cristana*, he makes eleven species, arranging the numerous varieties under each, but unfortunately giving no distinct characters of the species. Entomologists generally have not adopted them.—*E. Newman.*

*Death of Foreign Entomologists.*—Three North-Europæan entomologists of some note have recently passed away—Von Tiedemann, of Dantzic; Sommer, of Altona; and Westermann, of Copenhagen. All three must have been well advanced in years; the last had attained the great age of 87.—*Ent. Mo. Mag.* No. 49, p. 26.

# THE ENTOMOLOGIST.

No. 56.]

AUGUST, MDCCCLXVIII.

[PRICE 6D.

*Doings at Douglas.* By EDWIN BIRCHALL, Esq.

ACCOMPANIED by Mr. T. Hutchinson, of Leominster, and Mr. D. Baxendale, of Halifax, I spent a few days in the Isle of Man during the early part of last June. I append a list of the species of Lepidoptera observed, omitting those of universal occurrence; the number is small, but it must be remarked that our time was almost exclusively devoted to the capture of *Sesia Philanthiformis* by day and *Dianthœcia cæsia* by night, other species being only taken as they came in our way.

*Sesia Philanthiformis* was just emerging, and we found a considerable number in the pupa state. The best situations are the detached rocks at the base of the cliffs, both north and south of Douglas Bay. It is little or no use looking amongst the luxuriant growth of *Armeria* on the mainland; the stunted plants (often not larger than could be covered by a half-crown piece) scattered in the clefts of the water-worn rocks which fringe the shore, and maintaining a precarious existence amid the salt spray, in which they are perpetually bathed, are those selected by the *Sesia* for attack. A little red patch on the green cushion betrays the work of the larva, and when the eye is once accustomed to its appearance the infested plants may be recognized at a great distance. The moths emerged from June 18th to July 3rd.

*Dianthœcia cæsia* was abundant, hovering over the flowers of *Silene maritima* at dusk; its evening flight is of very short duration, and the situations in which the collector must place himself so dangerous that it is likely to be a scarce insect in collections for years to come. Stationed upon our rocky shelves, patiently waiting the hour of *cæsia*'s flight, we were the objects of much speculation and satirical remark by the sea-side loungers of Douglas. At length these depart, and, as slowly comes on the evening, the burly fox-moth careers

over the cliffs, and occasionally coming within reach of the solitary watches, is stopped on his wild dash; the shade deepens, and *Velleda* and *Porcellus*, *Venosata* and the *Plusias* successively come to feed; at last, when the fixed gaze on the white flowers has become painful from its intensity, the first blue-winged *cæsia* softly alights on the *Silene*; then suddenly the air is alive with moths, and he must be a cool entomologist who does not find his pulse beat high with excitement for the next twenty minutes: by a quarter-past 10 all is over, the moths cease to arrive or are invisible in the darkness, and the collector may descend as best he can from his elevation without damage to his bones, or still more carefully guarded pill-boxes. We devoted a day to the exploration of the southern extremity of the island: the majestic sea-cliffs of Spanish Head are the resort of innumerable sea birds, but entomologically the ground is barren. Mr. Hutchinson picked up a solitary larva of *Lithosia caniola*: as this insect is extremely local at Howth, it may prove to be equally abundant in the Isle of Man when its head-quarters are discovered.

Species captured:—*Chærocampa Porcellus*, *Sesia Philanthiformis*, *Hepialus velleda*, *Setina irrorella*, *Chelonia Plantaginis*, *Acidalia subsericeata*, *Eupithecia venosata*, *E. castigata*, *E. distinctata*, *E. nanata*, *Dianthœcia conspersa*, *D. cæsia*, *D. capsophila*, *Plusia V-aureum*, *Hadena adusta*, *H. dentina*, *Sericoris littorana*, *Eupœcilia albicapitana*, *E. atricapitana*, *Gelechia divisella*.

EDWIN BIRCHALL.

Airedale Cliff, Newlay,  
July 1868.

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*Proceedings of the Entomological Society of London.*

June 1, 1868.—H. W. Bates, Esq., President, in the chair. G. P. Shearwood, Esq., of Cedar Lodge, Stockwell, was elected a Member.

The Secretary announced that an exhibition of useful and destructive insects would take place in the Palais de l'Industrie, at Paris, during the month of August. The Committee

of Management includes Dr. Boisduval, M. Guérin-Méneville, and other entomologists and scientific agriculturists. The exhibition is to be made as comprehensive as possible, the scheme including the propagation of useful insects, methods of curing or preventing disease, and economical management; and the illustration of destructive insects, with means for opposing their ravages. As regards destructive insects, the Committee has determined on a practical instead of a scientific classification, the subdivisions being formed by the plants upon which the creatures feed. Foreigners are invited to take part in the coming exhibition; applications to be sent in before the 20th of July, to the Secretary of the Société d'Insectologie Agricole, No. 1, Rue Cadette, Paris, or at the Palais de l'Industrie. The insects or other objects of exhibition are to be sent in before the 25th of July, and the exhibition opens on the 1st and closes on the 31st of August. The following are the principal heads of classification:—First division: Useful insects—1st class, Silk-producing insects; 2nd class, Insects producing honey and wax; 3rd class, Insects used in dyeing and for colour; 4th class, Edible insects, Crustacea and mollusks; 5th class, Insects employed for medical use; 6th class, Insects used as ornaments. Second division: Destructive insects—Ten classes, *viz.*, those which attack cereals, the vine, plants used in industry, forage, vegetables and ornamental plants, fruit trees, forest trees, timber used for building, truffles and fungi, dry organic matter, and, lastly, parasites of man and domestic animals. The third division includes three classes—carnivorous insects, parasitic insects; destructive of chrysalides; and insectivorous animals, birds and reptiles. The fourth division includes—Insects and other creatures destructive of mollusks; and notices respecting edible snails and the benefit that cultivators may derive from them. Lastly, optical instruments for entomological purposes, and special apparatus connected with the rearing or destruction of insects. Printed or written memoirs are also to be admitted, even without specimens of the insects to which they refer; and it is further announced that conferences will take place in the exhibition on various subjects connected with “insectology” [? Entomology].

Mr. M'Lachlan exhibited the larva of a caddis-fly found

by Mr. Fletcher, of Worcester, crawling about the bark of willow trees: the case was like a Coleophora, but the feet of the larva showed it to be Trichopterous, not Lepidopterous. *Enœcylla* [*Enoicylla*] *pusilla*, a species of which the female was apterous, had for some time been known on the Continent to have a non-aquatic larva, and M. Snellen van Vollenhoven found the larvæ in great numbers at the Hague: this species had not yet been found in Britain, but Mr. Fletcher's larvæ were probably to be referred to it. It would be interesting to ascertain how the larva breathed, whether or not by spiracles.

Mr. J. Jenner Weir called attention to the Report, in the 'Journal of Horticulture' for May 21, 1868, of the Proceedings of the Scientific Committee of the Royal Horticultural Society, in which it was stated that on the 19th of that month "Mr. Berkeley exhibited specimens of the larva of *Coleophora hemerobiella*, which attacks the leaves of the pear and cherry, not, as is usually the case, by eating away the whole substance, but by attaching themselves by their discoid suctorial mouth, and extracting the sap from the parenchyma for some distance round the point of attack; which when they have exhausted they leave, and commence an attack in another part of the leaf, leaving a small hole similar to a leech bite. Finally they enclose themselves in the leaf, which is rolled up in the form of a tiny cigarette." Mr. Weir presumed that no one of the entomologists attached to the Scientific Committee could have been present at the promulgation of a statement so full of error.

Mr. Keays exhibited specimens of *Psyche crassiorella* from Hornsey Wood.

The Hon. T. De Grey exhibited pupæ of *Hypercallia Christiernana*; the larvæ were found on *Polygala vulgaris*, between the 27th of April and the 22nd of May, near Shoreham, and one became a pupa during the Meeting. The pupæ were of a beautiful bright green colour, attached by their hind extremity only to the sides of the glass cylinder in which they were exhibited, and were not suspended loosely by the silken attachment, but rigidly fixed in an oblique position at an angle of about 60° to the side of the cylinder.

Mr. A. G. Butler exhibited a small and pale variety of *Nemobius Lucina*, and a pair of *Anthocharis Cardamines*, all



from Herne Bay. Both sexes of *A. Cardamines* were remarkable for the largeness of the black spot on the disk of the fore wings, and the male had a rudimentary tail to the hind wings.

Mr. Edward Sheppard read the following extract from a letter written by Mrs. Russell, of Kenilworth, the beetle referred to being a *Meloe*:—"An evening or two ago I watched a beetle for an hour in the garden excavating a hole in the earth of one of the beds, big enough to hold its own large long body. It was evidently a female, full of eggs. It bit off little pellets of earth from the rim of its hole and cast them away with its hind feet, turning itself about in every direction, and working without a moment's cessation. It had very large, thick antennæ, and was plainly a very powerful creature, rolling down pieces of the dry crumbling earth half as big as itself, and not minding them a bit. Next morning I went to see the state of affairs, and found, to my astonishment, the excavation completely filled up, and smoothed over, as if some one had passed his hand over the finely-powdered soil. Thinking it possible she might have buried herself, I searched the place well with a stick, but there was no trace of her, and I therefore conclude that she had been laying some eggs and covering them up."

Prof. Westwood gave an account of his observations of *Ateuchus sacer* at Cannes, and mentioned that during flight the elytra were perfectly horizontal and very slightly open at the suture, so that the motion of the wings was confined within very narrow limits. The action of the beetles in rolling along the ground the ball or pellet of dung in which the female deposits her eggs was most curious: with head pressed down and hind feet raised aloft, with its back to the pellet and moving backwards, one beetle pushed and guided the ball with its hind legs, whilst another beetle clung to the ball, and remaining motionless thereon was rolled over and over with it, sometimes uppermost, sometimes undermost. [See the account of *Ateuchus variolosus* given by "Ionicus" in 'The Entomological Magazine,' vol. iii. p. 377.]

Mr. Keays exhibited oak-leaves from Hornsey Wood, which were cut straight across the middle, leaving only the midrib, and the outer halves then twisted and rolled up by *Attelabus Curculionoides*, with a view to oviposition.

The Hon. T. De Grey exhibited specimens of *Agapanthia Cardui*, bred from larvæ in stems of thistles.

Mr. A. G. Butler exhibited *Otiorynchus picipes*, which had been found destructive to rose trees at Manchester, eating off the young shoots.

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*Entomological Notes, Captures, &c.*

*Entomologizing on the Thames Bank.*—I have just returned from a short excursion down the river. I have examined the banks and mud islands on the Kent and Essex shores, but, owing to a strong wind one day and a drizzling rain the next, I have done very little collecting. I went ashore first on the Essex side: almost the only shrub or tree on the island is blackthorn; the larvæ of *C. neustria* and *T. Cratægi* have eaten every leaf; in some places the entire length of the hedges is so thoroughly denuded that the larvæ hang dead by hundreds, literally starved. We can hardly realize the devastating effects of insects, described by Kirby & Spence, &c., as occasionally occurring on the Continent; but a good idea may be formed on seeing the scorched and leafless sloe-bushes completely matted and woven together with the webs of *Hyponomeuta padellus*, and now thickly studded with the cocoons of *Bombyx neustria*, and at every few yards a mass of webs covered with the young larvæ of *Trichiura Cratægi*, that have certainly only been born to die, unless they fall back on reeds or burdock, for there is nothing else green for hundreds of yards. I saw a reed-stack completely covered with the half-grown larvæ of *T. Cratægi*; evidently unwilling to cross the dusty road, they had mounted the stack, as if to have a look across the country. Two men were amusing themselves by burning the webs (covered as usual with the cast skins of the young larvæ), fondly supposing they were staying the progress of the blight by destroying thousands of eggs. "The sloe is the only fruit that comes to anything on the island, but it is terribly blighted this year surely," said one of the men to me. These bushes usually produce a large quantity of sloes, which are largely used in the manufacture of British port. I found the prevailing idea was that the hot dry weather and the white butterflies caused

the "blight" in some way or other, but how no one knew. The wind was so troublesome that I could not find any male moths, except *X. Hamana* and *M. Cribrum*, which swarmed on thistles; *X. lithoxylea* was on every post, and *A. villica* and *E. Mi* flew like mad in the sunshine; I cut a few larvæ and pupæ of *L. Phragmitidis* and *N. Typhæ* from stems of reed and *Typha*. Sugaring at night produced nothing. I crossed the river in the morning, and collected a few larvæ of *C. castrensis* and a few small things, but the rain soon drove me from my collecting-ground, greatly to the relief of the red-shanks and peewits that are breeding on the islet: one red-shank (or "took," as they are called here) was very bold and clamorous; it kept running on the mud just ahead of me, and bobbed its head up and down as if in derision. On turning round a reedy corner I came on a brood of young coots on the bank: they scrambled into the water, but the weeds were so thick that they could not make headway, and I caught them all with my net. A few minutes later I also caught three young moorhens struggling in the weeds, and of course let the poor things escape after examining them. While stooping to pick up a larva a shore pipit glided off her nest under my hand. Larks' nests, almost invariably with five eggs, were in profusion. I caught a few worn *Lignata* and some fine *Fluviata* in the evening. Sugaring produced 1 *C. Elpenor*, 1 *Abjecta*, *Conigera*, *Obsoleta*, *Ulvæ*, several *Chilos*, 1 *Emutaria*, 3 *Fluviata*. *A. interjectaria* was very common on the sugar; I took a series, hoping to find them different from those captured on the uplands, but they are identical. I was rather surprised to find *T. viridana* common on the sugar; there is not a tree or bush for a mile round. I swept several *C. Pamphilus* off the wet grass, so large and brightly coloured that I at first tried to persuade myself it was a new butterfly. We came home as the tide turned; we were thoroughly tired, covered with mud, and "stung like a tench" by the marsh insects; and as regards entomological collecting the excursion was a failure; yet we are determined to have a sail down again in a few days, when I hope to have better luck, and give you a more interesting account. — *D. T. Button*; *June 23, 1868.*

*Entomological Notes from Fifeshire.* — In *Lepidoptera* we are very badly off here. I have sugared nearly every evening,

most nights on a half-mile beat. Last night I saw, 1 *Polyodon*, 1 *Augur* and 3 *Oculea*: at the blossoms of the turncap lily there are a good many *Plusiæ*; *Iota*, *Pulchrina*, a few *Chrysitis*, and one *Bractea*. I send you a list of all the *Noctuæ* I have taken, mentioning only those yet unpublished in your 'British Moths:—

*Apamea oculea*. Common at sugar, middle of July.

*Miana strigilis*. Rare at sugar, beginning and middle of July.

*M. fasciuncula*. Very common at sugar, middle of June to beginning of July.

*M. arcuosa*. Two flying at night.

*Rusina tenebrosa*. Not rare at sugar, middle to end of June.

*Agrotis Segetum*. Not uncommon at sugar, end of June.

*A. exclamationis*. Ditto, middle to end of June.

*Tryphæna fimbria*. Two, one drying its wings on a paling, the other a pupa in garden; none came to sugar.

*T. pronuba*. Common at sugar, July.

*Noctua plecta*. Rather scarce at sugar, June.

*N. Augur*. Three at sugar, middle of June to beginning of July.

*N. C-nigrum*. Three or four at sugar, middle of June to beginning of July.

*N. brunnea*. Three at sugar, middle of June.

*N. festiva*. Common at sugar, middle to end of June.

*N. baja*. One at sugar, middle of June.

*Dianthœcia capsicola*. One flying, middle of June.

*Phlogophora meticulosa*. One at sugar, beginning of June.

*Hadena dentina*. Several on palings, beginning to middle of June.

*H. oleracea*. Common at sugar, June.

*Cucullia umbratica*. One at flowers of Martagon lily, end of June.

*Abrostola Urticæ*. Three at ditto, end of June and beginning of July.

*Plusia Chrysitis*. Occasional at ditto, end of June till now.

*P. bractea*. One at ditto, end of June.

*P. Iota*. Not unfrequent at ditto, beginning of July till now.

*P. pulchrina*. Common at ditto, end of June till now.

The little *Artaxerxes* butterfly is very common on Orrock Hill, about a mile from here. — *J. Boswell Syme; Balmuto, Fifeshire, N.B., July 18, 1868.*

*Coleoptera at Southsea.* — *Brachinus crepitans* is very abundant at the roots of *Anthoxanthum odoratum* at the east side of the island. It is a good plan to cut armfuls of weeds and place them in a heap where this species occurs, and the next day to shake the dried herbage over paper or into an umbrella. In this way I have trapped upwards of a hundred specimens at one time, and the noise and smoke from so many minute pieces of artillery was something startling, and anything but pleasant to the eyes and nose. *Anchomenus prasinus* occurs with it in numbers, and is also plentiful in depressions in the sand near Southsea beach in February, March and April, but not to be met with during the summer months.

*Dermestes undulatus.* Very common along the shore, in dead birds, fish, &c. I shook upwards of thirty specimens from a dried dog-fish a few days since.

*Anthophagus Vacca.* In any numbers in cow droppings, in May and June, all along the coast.

*Priobium castaneum.* Dug from old whitethorn-stumps in April, in quantities. Like most of the wood-feeding species, the larva, pupa and imago may be found together.

*Cæliodes fuliginosus.* The larva of this species appears to be confined to the docks and plantains: it is a very abundant species from December to May; in the former month they must be sought for in holes in the sand; in May any number may be obtained by sweeping near Castney Fort.

*Cionus Scrophulariæ, Thapsus* and *Blattariæ.* On *Scrophularia aquatica*, in large numbers, near Portsdown Hill and at Hayling Island. These three species are generally found in company in June.

*Miccotrogus picirostris.* At the roots of grass among dead bramble-sticks in the winter, abundant on the east side of the island. Be sure to wear strong gloves whilst searching among brambles for this species, or you may get more thorns than beetles.

*Eriirhinus pillumus.* This has been considered an uncommon species and uncertain in the times of its appearance, but I have known it for some years as one of our most abundant

Coleoptera. The larva and imago feed on the false chamomile, from which the imago may be taken in April, May and June, wherever the above plant occurs. The imago leaves the pupa state in autumn and hibernates, and may be found sparingly during the winter months by pulling tufts of grass and shaking them over paper.

*Phyllotreta melæna*. Extremely numerous on sea-rockets and other plants in May, June and July, and at roots of grass during the winter all over the island.

*Thyamis dorsalis*. Generally considered a scarce species, but very common here on groundsel and ragwort in April and August (being double-brooded?), the leaves of which are quite riddled by them. It is to be found at the roots of grass all through the winter.

*Ischnomera melanura*. Another very abundant species, occurring among the shingle at bottom of stakes, old pools, &c., in company with *Anobium domesticatum*? and *Helops cæruleus*. It is a curious habitat for this insect. The larva feeds in the tops of the stakes, many of which are covered with water in gales of wind and at spring tides, but in June the imago leaves the top of the post and ascends to the shingle, where they copulate, and the female ascends again to lay her eggs in the upper part of the post. The imago should be searched for not later than the middle of June. — *H. Moncreaff*; *Southsea, July 20, 1868*.

*Entomological Notes from Deal*.— This has indeed been a butterfly year: for many a year I have not seen *Pyrameis Cardui* so numerous, and the larva is not at all particular about its food; I have some feeding on scarlet beans and others on mallow (*Malva sylvestris*). *Chærocampa Porcellus* and *C. Elpenor* have frequented the blossoms of the honeysuckle in some numbers, and I have taken several; and also a single specimen of *Deilephila Galii*. *Lithosia pygmæola* is now out on the hills; *Pterophorus Leinigianus* is also out in its locality. Sugar is well frequented at night with swarms of *Xylophasia polyodon* and *Agrotis Segetum*: they are quite a pest, as there is no chance of getting anything else while they occur: they give battle to everything that comes in their way. The larvæ of the common puss are to be had in any number on willow, poplar, and black poplar. — *H. J. Harding*; 131, *Lower Street, Deal, Kent*.

*Captures at Bury St. Edmunds.*—I have taken this year, at Bury St. Edmunds, eight specimens of *Agrophila sulphuralis*, sixteen of *Spilodes sticticalis*, and about fifty larvæ of *Lithostege grisearia*. — (Rev.) *A. H. Wratislaw*; *School House, Bury St. Edmunds*.

*Agrophila sulphuralis, Acidalia rubricata, &c., at Mildenhall.*—I have spent nine days at the 'Anchor' Inn, Tyddenham, Mildenhall, during which I have searched diligently for local insects, though without sugaring. The result has been 36 *A. sulphuralis*, 45 *A. rubricata*, and several moths that I do not know. *S. sticticalis* I scarcely took the trouble to catch, having previously taken sixteen at Icklingham. *A. rubricata* was a very peculiar insect to take. I walked the same field—a rye-grass field—several times over in the day-time and towards evening, with but poor success, when suddenly, about half an hour before sunset, quite a number appeared on the wing, and I increased my take from about four or five to fifteen or twenty. Did I mention that I have a larva of *Acronycta Alni* taken at Culford? P.S.—I told mine host of the 'Anchor' the localities, so any one wishing to follow my example, at a subsequent time, can get the proper information.—*Id.*

*White Butterflies.*—Passing along the high road near Arundel last week, I was agreeably surprised to see quite a swarm of our common white butterflies all congregated in a small spot; about twenty of them were settled on a damp place about six inches square, and about thirty more flying round and trying to get to that enviable place. It reminded me of what Mr. Bates and other travellers have recorded of having seen in the tropics. This extraordinary hot season has brought them out in prodigious numbers in most parts of the South of England, and I should like to know if any other entomologists have observed the same phenomenon.—*Samuel Stevens*; 28, *King Street, Covent Garden*.

*Mortality among Larvæ.*—In April, Dr. Wallace sent me some eggs of the Japanese *Bombyx*, which hatched, and the larvæ appeared perfectly healthy until last week, when they all died like yours: I kept some out-of-doors and some in-doors, but they all died about the same time. All the larvæ of *Bombyx Quercus*, reared from the eggs which you sent me two years ago, lived through the winter very well, and fed

again in the spring; but when they changed their skins the last time they all sickened and died. In a letter which I received from M. Guenée, a week or two back, he says that about two hundred larvæ of *Bombyx Spartii* and the same number of *B. Quercus*, reared from eggs he received from Cannes, died off in the same way last April.—*Henry Doubleday; Epping, June 25, 1868.*

*Mortality among Larvæ.*—In April last Dr. Wallace most kindly sent me a bountiful supply of the eggs of *Saturnia Yamamai*: they hatched during May, and the young larvæ appeared at first to be going on favourably, but during the second moult a considerable number of them died, and on visiting them each morning a few others were dead; the remnant were turned out on a small oak in my garden, thinking that perfect exposure to the air might be the means of saving them; in this, however, I was disappointed, as, during the week ending the 20th of June, every one of them died, and hung down from the oak twigs as flaccid as empty sacks: will any entomologist favour us with his experience in this matter, or, better still, assign a cause for this mortality, and suggest a remedy?—*Edward Newman.*

*Pieris Rapæ at the approach of night.*—Last evening, July 16th, returning from my engraver's, at 9 P.M., I saw on the bank of the railway a number of white butterflies sipping the lucerne, and flying from flower to flower: I believe them to have been all *Pieris Rapæ.*—*Id.*

*Limenitis Sybilla and Apatura Iris at Ipswich.*—Both these species have been so plentiful that some of our collectors have taken eight or ten dozen of each.—*Garrett Garrett.*

*New Locality for Sesia Sphegiformis.*—Mr. Chappell announces, in the 'Entomologist's Monthly Magazine' for July, the capture of this rare *Sesia*, both in Burnt Wood and Bishop's Wood, in Staffordshire: the insect rests on low plants in the neighbourhood of alder, and one specimen was found among birch, far from alder, hovering over a tuft of *Calluna vulgaris*, about 4 o'clock in the afternoon: it is also on the wing in the evening, flying rapidly, with an undulating flight.

*Lycæna Arion at Painswick.*—On June 1st I took one specimen of *Lycæna Arion* on the north-east side of Painswick Hill; business prevented me visiting the place again in



the daytime, but, having spent four evenings searching in the same place, I succeeded in taking twelve specimens. The last I took on June 23rd; it was much worn in appearance. I found them at rest on the long stems of a species of coarse grass in exposed situations. The ground is rough and broken, consisting chiefly of small quarries not in use. There is a wood a short distance off. The extent of ground over which they were found is about half an acre. — *C. J. Watkins; King's Mills, Painswick, Gloucestershire, July 10, 1868.*

*Smerinthus ocellatus*: is the Larva more than usually common this year? — I took six larvæ last week from a very small apple-espalier, planted only last year, the leaves of which would scarcely have sufficed them till full-grown. On Saturday I took fifty-one from three dwarf willows. Perhaps my question may elicit replies from other parts of the country. (Rev.) *P. H. Jennings; Longfield Rectory, Gravesend, July 13, 1868.*

*Unusual Economy of Xyleutes Cossus.* — I have lately reared a goat-moth, the larva of which formed its cell in an entirely different fashion from that generally attributed to its species. It was brought to me on the 17th of April, having been withdrawn from a cell formed of grains of earth and silk, which had been dug up in the midst of an arable field. I put it in a breeding-cage, and it soon burrowed again in the earth. On June 28th it emerged a perfect moth, though somewhat smaller than usual, probably the result of the annoyance to which its capture subjected it. Is it possible that being disturbed by the felling of the tree on which it fed may account for this departure from the general habits of the larvæ? If Mr. W. E. Brennard succeed in rearing his specimens, perhaps he will favour us with an account of their life-history. — (*Miss*) *E. Newman; West-End House, Uxbridge, July, 1866.*

*Dianthœcia conspersa as an Irish Species.* — I was surprised to see, by Mr. Birchall's note in the last number of the 'Entomologist,' that this species, as Irish, was only known from one reputed specimen: I thought it was well known that it was taken by the late Mr. Weaver; I saw many specimens of his capturing in Ireland many years ago, and have now four specimens in my cabinet of his taking at the same time, or on the same trip, when he got *H. Banksiana*: they

are much richer and darker in colour than any English specimens I have seen.—*F. Bond*; *July 13, 1868.*

*Urapteryx sambucaria* in the County Wicklow.—*U. sambucaria* is very plentiful here this summer; when I say plenty I mean that I have seen at least a dozen flying about here in a space of less than ten acres. I never saw it in Ireland till now, and I think you may like to hear of one fixed place where it has been seen. I have caught two, and do not intend to catch any more, hoping they may make a settlement here. — *Martha Ellison*; *Vallé Pacis, Newtown, Mount Kennedy, Co. Wicklow, Ireland, July 6, 1868.*

*Moths in Beehives.* — Last week my son brought me some cocoons, caterpillars, and a perfect insect, taken from the inside of a beehive, and he asked me to go and see the destruction they had made in the hive; I accordingly went, and never did I witness such a sight before: there could not have been less than between two and three thousand, probably many more, caterpillars and cocoons, with an occasional perfect insect; the cocoons were spun up all round the interior of the hive, in some places upwards of three inches thick, packed in, in all sorts of shapes, the entrance also being completely blocked up, so that they would in all probability have perished; the caterpillars were found in groups, behind the cocoons, next to the hive, as if about to change, although some of them were not more than half-grown: I should like to have seen them before they had been touched, but the person who owned the hive had taken them out and thrown them down to feed the poultry, and he assured me that three or four hens had filled their crops before I came: it was necessary to keep stamping our feet to prevent them crawling about us; if we stood still a minute there would be several crawling over our boots. I took nearly half a pint of cocoons home and placed them in a box, and the moths are now coming out at the rate of four or five each day. Such a sight never occurring to me before, and thinking it might be an unusual thing, I feel it my duty to send you word about it. Should you like to have a few cocoons, by sending word you can have them. It is almost unnecessary to say that the bees were all dead. — *J. King*; *Langford Road, Biggleswade, Beds, July 10, 1868.*

[The moth sent is *Galleria cerella*.—*E. Newman.*]

# THE ENTOMOLOGIST.

No. 57.]                      SEPTEMBER, MDCCCLXVIII.                      [PRICE 6D.

*Life-history of Scotosia vetulata.*—The life-history of this species is not only interesting, but very unusual: it would appear that the eggs are laid about Midsummer, on the woody stems of *Rhamnus catharticus* (the buckthorn), and that they remain unhatched until the first week in the following May: these proceedings are inferred rather than proved by the fact that at that period the young larvæ, then perfectly black, may be found mining the young shoots which are then just making their appearance: the presence of these youthful destroyers is indicated by the flaccid and drooping condition of the succulent twigs; a week later the little larvæ emerge from this natural shelter, and provide one somewhat more artificial, by fastening two or three of the young leaves together and concealing themselves in the interior, their colour still remaining perfectly black: if one of these retreats be opened during the third week, the contained larva will be found rather more gaily coloured, and will remind the entomologist of those of *Scotosia certata* and *Ypsipetes elutata*, both of which I have previously described; it is now rather stout and very sluggish; it continues to construct a dwelling for itself, either by rolling up a single leaf or by fastening two leaves together face to face; some of their retreats are made with remarkable care, others are more loosely constructed; the larvæ seem never to bite the edge of the leaf, like the generality of caterpillars, but feed on the parenchyma only, leaving the veins and one of the exterior coats of the leaf entirely untouched: this depauperating process causes discoloration of the leaf, so that the presence of a larva may be readily detected, and it is at this period that they are found most readily. During its whole life this species conceals itself so effectually from the scrutinizing eyes of the entomologist, that it is difficult to observe it in a natural position: when exposed it feigns death, bends its

body double, not in the ring form, and remains motionless until all fear of detection has passed away. The head is much narrower and altogether smaller than the 2nd segment, rather porrected, perfectly glabrous but rather hairy; the body is obese, short and broad; the segments distinctly marked; the general surface uneven and rugose, and very sparingly clothed with hairs. The colour of the head is black; the front of the 2nd segment is yellow, with a transverse dorsal plate of a deeper yellow, and longitudinally divided by a median line; there is a medio-dorsal whitish stripe, intersected throughout by a slender dark stripe; on each side of this is a broader lead-coloured stripe, containing a median series of white spots; and again below this is a broad dirty-white spiracular stripe, which contains a median series of lead-coloured spots, and also the spiracles, which are black; this extends to and includes the anal claspers; again below this is a lead-coloured stripe terminating before the ventral claspers; the ventral area is dingy honey-yellow. All my specimens left their retreats when full-fed, and changed to pupæ on the earth, among leaves at the bottom of the glass in which they were kept; this was on the 2nd and 3rd of June: the pupa is long and slender, the tip of the abdomen pointed; the colour of the wing-cases is pale brown slightly tinged with green; the abdomen is redder. I am indebted to my kind friend Mr. Jeffrey, of Saffron Walden, for a supply of this interesting larva and a knowledge of its economy; and I ought to mention that this is the second time he has supplied me, last year's batch having arrived at a time when I found it impossible to describe them.—*Edward Newman.*

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#### *Entomological Notes, Captures, &c.*

*Pupa State of Insects, especially Cynips and Ichneumon.*  
—We are so much in the habit of associating the pupa state of insects with our ideas of death, that we often quite lose sight of the extraordinary and mysterious changes which are going on during the time insects remain in that state. It is no doubt owing to the opacity of the substance in which the pupa is enclosed that so little is generally known of these

changes; but this objection does not apply to the gall-insects and Ichneumons: in these the envelope is so very transparent that, from the time they leave the larva state until they become imagos, every alteration may be noted by simply removing the pupæ from their galls or cocoons, and placing them in glass tubes, which should be stopped with cotton wool and kept in the dark. In this way I have been much interested, during the past spring, in watching the gradual development of many of the above-named insects; and I must say that many of my former opinions have undergone a great change. For instance, I found that at no time did they appear to be without life or motion, but at intervals small pellets of soft frass were ejected, showing that even digestion was in some way in active operation; also that the beautiful red, yellow, and black colours of the imago were developed from the internal fluids by natural causes, and not from the action of light at all, light only having been admitted while they were under examination. But perhaps a short life-history of the Ichneumon which infests the larva of *Zygæna Filipendulæ* will better illustrate the subject. In April this parasite lays a solitary egg on the back of the larva of the *Zygæna*. This, having come to life in a few days, eats its way through the skin, and commences feeding upon the fatty portion of the caterpillar. By the end of June the lepidopterous larva is full-fed, and spins a white, sickly-looking cocoon; but instead of changing into a pupa it produces a stout hymenopterous maggot, the larva of the future Ichneumon. Having devoured the whole of its supporter, with the exception of the skin, it spins for itself a hard cylindrical cocoon at the end of that previously spun by the *Zygæna* larva, and, if not disturbed, would remain in this until the following March or April. It is now about eight lines long, pale yellow, onisciform, and very lively. No perceptible change takes place until the end of January, when the eyes become darker, the body more attenuated, and numerous pellets of frass are ejected. By the end of February the waist is clearly defined, and the antennæ, legs and wings show through the shell; by the second week in March the whole of the members stand clear of the body, each encased in a transparent covering; after this the change goes on more rapidly; minute atoms of a dark colour, commencing at the head, gradually

steal over the body, which in a short time assumes its perfect markings; and by the end of March, in most cases, the insect is perfect; the antennæ are, one by one, drawn out of their cases, the legs and wings quickly follow, the whole of the envelope is thrown off, and the imago wings its way in search of the larva of *Z. Filipendulæ*. — *H. Moncreaff*; *Southsea, August 17, 1868.*

*Acidalia ornata*: *retarding effect of heat*. — That heat acts sometimes as a retarder of insect life, paradoxical as it may seem, would appear to be the case from the following facts. The local species *Acidalia ornata* occurs pretty generally on the hills in this neighbourhood, though not abundantly, the larva, as is well known, feeding on the wild thyme. This year the species was very scarce at the time it usually appears, from the beginning to the middle of June; but on the 3rd of August, that is about two months after the usual time, I found the species more numerous, and in such good condition that it was clear it had not been very long on the wing. On examining the food-plant I found large quantities of it almost entirely burnt up from the recent hot, dry weather, leading to the inference that the growth of the caterpillar had been retarded from the deficiency of succulent food available for its consumption. — *J. Merrin*; *Gloucester.*

*List of Lepidoptera bred, with some Dates, Localities and Food-plants.*—

*Papilio Machaon.* Larvæ received from Cambridgeshire: they were fed on carrot.

*Limnitis Sybilla.* Larvæ received from Haslemere, feeding on honeysuckle.

*Thecla Quercus.* Larvæ found feeding on oak at Croydon in May.

*Sphinx Ligustri.* Six specimens; larvæ found in August, feeding on ash.

*Lithosia helveola.* Seven specimens; larvæ found on yew at Box Hill in June.

*Chelonia villica.* Eight specimens; larvæ found at Plumstead in April.

*Demas Coryli.* First brood early in May, second at the end of June.

*Eurymene dolobraria.* Several; larvæ found at Loughton.

*Selenia lunaria*. Three; larvæ found feeding on ash in August.

*S. illustraria*. Eleven specimens of a first brood in April: a female deposited a brood of eggs which proved to be fertile, and from which I reared ninety-six very fine specimens. Of a second brood the moths began to emerge as early as the middle of June, and had finished by the first week in July. They fed on hawthorn, hornbeam, oak and birch.

*Ennomos tiliaria*. Six unusually large specimens; larvæ found feeding on birch.

*E. fuscantaria*. Larvæ feeding on ash: three of them have emerged; the remainder are still feeding.

*E. erosaria*. The moths are now coming out; larvæ found feeding on oak at Loughton in June.

*E. angularia*. Ten specimens; larvæ found feeding on beech in June.

*Nyssia hispidaria*. Three specimens; larvæ found at West Wickham, feeding on oak, in June.

*Hemerophila abruptaria*. Sixty-nine specimens; larvæ fed on lilac.

*Cleora lichenaria*. Four specimens; larvæ found at Box Hill in June.

*Boarmia rhomboidaria*. Several very dark specimens; larvæ found on Clematis in May.

*B. abietaria*. Twelve specimens; larvæ found at Box Hill feeding on box: one of them, a female, is a remarkably beautiful black variety.

*Tephrosia consonaria*. One specimen; larva found at Loughton feeding on oak.

*T. biundularia*. Four specimens of a first brood, from larvæ feeding on oak; and one of a second brood, from a larva found at Box Hill feeding on yew.

*T. extersaria*. Three specimens; larvæ found at Darent feeding on oak.

*Iodis vernaria*. Nine specimens; larvæ found at Greenhithe feeding on Clematis.

*I. lactearia*. Three specimens; larvæ found at Loughton on oak.

*Ephyra trilinearis*. Twenty specimens; larvæ found at Loughton on beech.

*Numeria pulveraria*. Three specimens; larvæ feeding on hawthorn.

*Ligdia adustata*. Nine specimens; larvæ found at Croydon feeding on the spindle tree (*Euonymus europæus*): the first brood appeared in April; the second is now (25th of July) coming out.

*Eupithecia fraxinata*. Larvæ found at Croydon feeding on ash.

*E. exiguata*. Five; larvæ found at Darenth feeding on oak.

*Melanippe procellata*. Two specimens; larvæ found at Croydon on Clematis.

*Phibalapteryx vitalbata*. The first brood appeared in April; the second is now (25th of July) emerging freely.

*Scotosia dubitata*. Larvæ found at Croydon in June.

*S. vetulata*. Larvæ feeding on buckthorn (*Rhamnus catharticus*) in May.

*S. rhamnata*. Twenty specimens; larvæ found on buckthorn in May.

*Cidaria corylata*. A fine series bred in April; larvæ taken at Loughton, in September last, feeding on hawthorn.

*Platypteryx Lacertula*. Four specimens; larvæ taken at Mickleham feeding on birch.

*P. Hamula*. Seven specimens; larvæ found at Loughton feeding on oak: the first brood appeared in May: these larvæ were taken at Loughton on the 20th of June, which produced moths in ten days: the same remarks apply to *P. Unguicula*.

*Cilix spinula*. I have bred several specimens from larvæ found at Loughton, in October last, feeding on blackthorn.

*Cucullia Lychnitis*. Five specimens; larvæ found at Box Hill in August.

*Stauropus Fagi*. A single specimen; larva found at Loughton feeding on oak.

*Notodonta camelina*. Twenty-two specimens; larvæ collected principally at Loughton during last September. The moths began to emerge about the middle of May, and have continued to appear from that period to the present time, one being taken from the breeding-cage on the 22nd of July.

*N. dodonæa*. One specimen; larva beaten at Mickleham in September.

*Halias prasinana*. Thirty specimens, but no varieties.



*Halias quercana*. The larva of this beautiful species was unusually common in many localities in May; I have bred twenty-three fine specimens.

*Sarrothripus Revayana*. Nineteen specimens; larvæ obtained at Box Hill in June.

*Nephoteryx angustella*. After many close searches for the larva of this rare species, I detected a few on the spindle tree last season, and bred five specimens this spring.

*Pteroxia caudella*. Now emerging; larvæ collected on the spindle tree at Darenth, in June.

*Hypena rostralis*. This insect has just been bred from a bright green, half-looping larva, found feeding on the wild hop on Hackney Marshes, about the middle of June.

This has been the best season for larvæ I have known for many years, *Notodonta chaonia*, *Ennomos erosaria*, *Cymatophora ridens*, *Halias quercana*, *Sarrothripus Revayana*, and indeed many others, having been comparatively plentiful.—*William Machin*; 6, *Henry's Terrace, Carlton Road, Carlton Square, Mile End, July 25, 1868.*

*Captures at Gravesend*.—I found a small brood of the larvæ of *V. Polychloros* on willow; I cut the bough off, and they almost all changed to pupæ the same day, and in less than a fortnight twenty-five fine specimens made their appearance: they all came out of pupa the same day. This butterfly seems to get scarcer every year.

*C. Hyale*. In profusion. Myself and three friends captured about 250 in a few hours. *C. Edusa* is also common, but not in such numbers as its paler relative.

*P. Globulariæ* and *A. Trifolii*. Common. I have taken both species several times when sweeping flowers at night.

*S. papyratia*. Several at rest on reeds, &c., at night.

*C. castrensis*. Bred, and attracted by the lamp when sugaring in the marshes.

*L. obsoleta*, *L. Comma*, *L. straminea*, *L. Phragmitidis*. A fine series at sugar, and several bred.

*S. maritima*. Bred, and at sugar and mothing.

*N. Saponariæ*. On flowers at night.

*M. abjecta*. At sugar, a fine series. Varies extremely in size.

*E. ochroleuca*. At sugar and by sweeping the long grass.

*A. luctuosa*. Abundant in chalky places. I captured 150, in the hope of finding *Solaris* among them. I also bred them freely from the egg.

*S. illustraria*. At light in the town.

*A. rusticata*. Common in most hedgerows where there is plenty of bindweed and dust: the last seems most essential.

*A. subsericeata*. Several on dry chalky banks.

*A. emutaria*. A fine series, by mothing and at sugar. A sluggish insect: it only flies for about ten minutes at dusk, and then must be looked for on water plants. I bred a few from the egg. Eggs laid June 16th; imagos appeared July 28th to August 10th.

*A. promutata* (*incanata* of Stainton's 'Manual'). Very common everywhere, end of May and again in August; and probably there will be another brood in October.

*F. limbaria*. Common in May among broom. Extremely variable in colour; some are nearly black.

*C. Gemmaria*. Common at light, sugar and mothing, and bred from the egg; I bred two from larvæ found on *Chenopodium*.

*P. lignata*. Common in May and August.

*E. unifasciata*. A few fine specimens on flowers at night.

These are a few of the best I have met with. I have not much time for collecting, and have been an invalid the best part of the season; but I think the locality would be as good as Cambridgeshire if well worked. — *D. T. Button; Gravesend, August, 1868.*

*Pieris Brassicæ* and *P. Rapæ* settling on wet ground. — In answer to Mr. Stevens's inquiry (Entom. iv. 119), I beg to inform him that during the sultry days of July, both at Uxbridge and Brighton, I frequently noticed the phenomenon to which he alludes. I have observed *P. Rapæ* and *P. Brassicæ* following the water-carts in swarms, and occasionally settling complacently on the damp earth. I tried watering in our own grounds as an attraction, but inasmuch as only the above-mentioned availed themselves of my care, it was by no means a successful trap. — (*Miss E. Newman; 92, Lansdowne Place, Brighton.*

*Pieris Daphidice at-Margate*. — I captured a specimen (unfortunately not a good one) of this scarce species in the lucerne fields near Marsh Bay, Margate, last Wednesday. I have also met with *Colias Hyale*, *C. Edusa*, *Vanessa Cardui*, *Acontia luctuosa*, *Aspilates citraria*, &c., in various fields round Margate during the last three weeks. — *Julia E. Cox; West Dulwich, S., August 6, 1868.*

*Pieris Daplidice at Dover.*— In a clover stubble at the back of Dover Castle I saw a young gentleman take a female specimen of *Pieris Daplidice*, in good condition: this was on the 11th of August.— *W. J. Sterland; Grove Road, Colney Hatch Park, August 19, 1868.*

*Colias Hyale at Ramsgate and Croydon.*— At the usual meeting of our Natural History Society the capture of more than ninety specimens of *Colias Hyale*, during the present month, was recorded,—about sixty at Ramsgate, and the remainder at Croydon.—*William Robinson; Friends' School, Croydon, August 20, 1868.*

*Colias Hyale at Brockley and Lee.*— On July 25th I captured a specimen of *C. Hyale*, in fine condition, gliding swiftly along the sloping banks of the Brighton Railway at Brockley. On the 1st of August, at 9 A.M., I found, on a blade of grass in a meadow in Burnt-Ash Lane, Lee, another specimen of the same species, drying its wings, having just emerged from the pupa. I believe it is very common this year, as two collectors residing at Deptford have captured as many as four dozen between them.— *W. West; 6, Green Lane, Greenwich, August 11, 1868.*

*Dicranura bifida.*— I wish to note the appearance of *D. bifida* on the 6th of August, having been in pupa only seventeen days. I found the cocoon on the 20th of July, under the fancy work of a brick wall on Blackheath; when broken open it enclosed the larva, which changed to pupa before I arrived home.—*Id.*

*Argynnis Lathonia at Darenth.*— While collecting *Colias Hyale* in a meadow near Darenth Wood, on the 16th inst., I had the pleasure of taking this beautiful fritillary in the most perfect condition.— *E. Harper, jun.; 37, Mansfield Street, Kingsland Road.*

*Argynnis Lathonia at Ipswich.*— A few days since a lad took what he called a small Adippe from a clover-field near this town, which proved to be a fine male of *Lathonia*. He sold it to Mr. Eaton, a birdstuffer here.— *Garrett Garrett; 172, Woodbridge Road, Ipswich.*

*Variety of Pyrameis Atalanta.*— One of my children has just brought me a most beautiful and distinct variety of *P. Atalanta*, the upper tips of the wings being suffused rather than spotted with bright gray, the under side of these tips all

blue, and the scarlet band only reaching about three-quarters of the usual length, with two minute white spots where the bands end. I have taken a great number of this insect, but this is the first striking difference I have ever met with from the common type.—(Mrs.) *F. I. Battersby*; *Cromlyn, Rathowen, Westmeath, August 7, 1868.*

*Hermaphrodite Specimen of Satyrus Semele.*—Yesterday my son captured, in my garden, a beautiful hermaphrodite specimen of *Satyrus Semele*. The wings on the left side are precisely like those of the female, and the wings on the right-hand side are exactly the same as those of the male. I suppose you would call it hermaphrodite, as it partakes of both sexes.—*Garrett Garrett*; 172, *Woodbridge Road, Ipswich, July 17, 1868.*

*Hermaphrodite Specimen of Lycæna Alexis.*—One of the most extraordinary captures on record in this neighbourhood is that of a specimen of the common blue (*Lycæna Alexis*), having both male and female in one insect as perfect as possible. The upper side of the right wings, representing the male, are purplish blue, the under side bluish gray, with numerous black spots, and a row of orange spots parallel with the hind margin of both wings; the left wings, representing the female upper side, are dingy brown with bluish shades and reflections, and have six crescent-shaped orange spots on each wing parallel with the hind margin; the under side is brownish gray, with numerous black spots, and a row of orange spots parallel with the hind margin of both wings.—*John Thorpe*; *Middleton, near Manchester, August 17.*

*Deilephila lineata at Middleton.*—On the 9th of this month Mr. John Taylor captured, in this neighbourhood, a beautiful female specimen of *Deilephila lineata*, in good condition. It was exhibited alive at the Middleton and Yonge Naturalist's Society.—*Id.*

*Deilephila lineata in Yorkshire.*—On July 23rd I caught a very fine specimen of *D. lineata* on our mill-wall at Birstall.—*Isaac Binns*; *Batley, Yorkshire, July 28, 1868.*

*Deilephila lineata near Truro.*—On the 2nd of August I took a specimen of *Deilephila lineata* in my garden near Truro.—*Arthur P. Nix*; *Miner's Bank, Truro, August 18.*

*Sphinx Convolvuli and Cirrhœdia xerampelina at Doncaster.*—I took at sugar last evening, August 17th, in the

Carr Wood, a splendid specimen of *C. xerampelina*; it looked as fresh as if it had just emerged from the pupa. I saw another, but lost it. I think it is a new locality for this insect, as I have never heard of its having been taken before. The same day I had brought me a splendid specimen of *Sphinx Convolvuli*, which had been taken off a door-knocker. — *W. Clark; Doncaster, August 18, 1868.*

*Sphinx Convolvuli and Deilephila lineata at Darlington.* — I took a fine specimen of *D. lineata*, at geraniums in my garden here, on the 14th inst. Several *Sphinx Convolvuli* have been taken at gladiolus-flowers in the town of Wolsingham, by collectors there, this last week. — *Wm. Backhouse; St. John's, near Wolsingham, August 21, 1868.*

[A great number of *Sphinx Convolvuli* have been taken near Canterbury. — *E. Newman.*]

*Chærocampa Elpenor and Smerinthus Populi.* — Can any entomologist explain the following remarkable circumstance? A friend of mine had a larva, about an inch long, of the elephant hawk-moth (*C. Elpenor*), brought to him about three weeks ago, which was found on some bogbean about four miles from here. We went there and found more than twenty, and afterwards three or four on bedstraw. I had four pupæ, out of those I found, which changed about a fortnight ago. Fully expecting them to remain in the pupa state until next June, imagine my surprise when, on looking at my pupæ this morning, I found two imagos emerged. This seems extraordinary, as both the 'Lepidopterist's Calendar' and Mr. Newman's 'British Moths' say that the moth is found in June and the caterpillar in August. Has any other entomologist experienced this unusual occurrence? My friend had a poplar hawk-moth (*S. Populi*), apparently fresh from the pupa, given him about a week ago: could this be from last year's larva? — *A. Mathews; Oxford, August 5, 1868.*

*Macroglossa Stellatarum and Necrophorus Vespillo at Penzance.* — The humming-bird moth (*Macroglossa Stellatarum*) and the burying beetle (*Necrophorus Vespillo*) both occurred in my garden yesterday. I do not know that the latter is scarce here, but I do not recollect having ever seen it in this neighbourhood. — *Thomas Cornish; Penzance, August 15, 1868.*

*Death of Yama-mai Larvæ.* — With reference to your

ill luck in rearing the *Bombyx Yama-mai*, I beg to give my experience with the same. The eggs I had of Dr. Wallace came out very well during the latter part of April and beginning of May, and the larvæ were going on very satisfactorily, but few having died till I left home on the 1st of July, when I gave them in charge of my gardener. They had mostly got through their second moult, were an inch and more in length, and apparently quite healthy; but in a week after that they began dying off, from no known cause: in the evening they looked all well, and in the morning some twenty or so would be hanging from the sides of the cage, dead and perfectly flabby; and in about ten days the whole (some 150) were dead, the largest going first. I thought, when I first heard of this, that it might be from some neglect; but your statement and Mr. Doubleday's show me others have, unfortunately, not succeeded better than I have. If other gentlemen would kindly give their experience, the causes of our non-success might perhaps be ascertained. — *G. P. Shearwood; Cedar Lodge, Stockwell, August 15, 1868.*

*Successful rearing of the Yama-mai.* — My experience (if worth anything) with *Yama-mai* was this:— Out of about ten eggs received from Dr. Wallace two only hatched; one died in a few days; the other fed on without the slightest trouble, and is now in pupa. I kept it under a large globe, with a branch of oak in a bottle, and found that the young succulent leaves were distasteful; the full-grown ones, from large trees only, were eaten: perhaps there was too much moisture in the food you gave, which might account for their condition at death.—*R. H. Fremlin; Wateringbury, August 6, 1868.*

*Urapteryx sambucata at Gateshead.* — In your 'British Moths' you mention *A. sambucata* as a south-country species: I beg to inform you that I have taken a single specimen at Dunston.—*T. H. Hedworth; Dunston, near Gateshead, July 29, 1868.*

*Negro Variety of Biston Betularia.* — Many pairs of the black variety of *Biston Betularia* have been taken *in cop.* in this locality during this and last season: one pair of them has produced more than a hundred black specimens. — *John Thorpe; Middleton, near Manchester.*

*Is Notodonta dromedarius double-brooded?* — In the 'Entomologist,' vol. ii. p. 316, I find the question, "Is Noto-

donta dromedarius double-brooded?" followed by a notice that the larva was found on the 17th of July, and the perfect insect emerged on August 16th. The description in 'British Moths' says that "the moth appears in June," and the caterpillar "is full-fed about the 20th of September." I am strongly inclined to think there is a brood between these dates. I took eighteen larvæ on alder and birch in the course of last month. Many of them had unfortunately been stung. One spun up on the 22nd of July, and the perfect insect appeared on the 5th of August; the rest have disappeared since the 1st instant, and will in all probability emerge in about ten days. I found the larvæ to feed freely on hazel as well as on alder and birch.—(Rev.) P. H. Jennings; *Longfield Rectory, Gravesend, August 8, 1868.*

*Orthosia suspecta* near Manchester.—I have taken in this neighbourhood, pretty freely at sugar, *Orthosia suspecta*, during this month.—J. Thorpe; *Middleton, near Manchester.*

*Eubolia palumbaria*.—I read the other day your interesting life-history of *E. palumbaria* (page 74); but with reference to the food-plant of the larva I would remark that it is here invariably gorse, as on Bidston Hill, where this insect abounds, little or no broom is found. Though this is such a forward season, I found some larvæ not full-fed even as late as the 14th of May. About that time I noticed that some were spinning their cocoons among the spines of the gorse, close to the main stem. These cocoons did not strike me as being very compact; on the contrary, they appeared very slight, just sufficiently strong to prevent the pupæ from falling out. The first of my *palumbaria* emerged on the 4th of June; I had, however, already taken a specimen on the 18th of May; but they were most abundant, and still in good condition, about the middle of June. The larvæ were most plentiful at the end of April, but they were not full-fed. At the same time I found commonly on heath the larvæ of *G. obscurata*, *porphyrea* and *Myrtilli*, and on grass, &c., larvæ of *Janira*, *orbona*, &c. When touched I noticed that the larvæ of *palumbaria* always looses its hold and falls to the ground, without curling its body, so that unless something can be placed under them there is little chance of getting any.—E. L. Ragonot; *British Literary Union, 130, Conway Street, Birkenhead, August 11, 1868.*

*Larva of Acronycta Alni near Wolverhampton.*— I found a larva of *Acronycta Alni* near here on July 28th. It was on the decayed trunk of an alder-bush in a hedge. It was apparently descending to spin up. I took it home, and on the 27th it had spun up inside a small piece of rotten willow wood. It was of a velvety black colour, with an oblong yellow patch on the back of each segment, and from each segment long spines issued, clubbed and flattened at the end, somewhat like a butterfly's antennæ.—*W. A. Shoobred, jun. ; Tettenhall Wood, Compton, Wolverhampton, July 28, 1868.*

*Dianthæcia conspersa in Ireland.*— I have been fortunate in capturing *D. conspersa* this season: Mr. Birchall says it is the darkest specimen he ever saw.—(*Mrs.*) *F. I. Battersby ; Cromlyn, Rathowen, Westmeath, August 7, 1868.*

*Coccinella variabilis: how do the black spots acquire their colour?*— I have lately observed that the two-spotted ladybird, when fresh turned from the chrysalis, has the elytra of a pale yellow, with no appearance whatever of the black spots, while the wings are unfolded and stretched out behind the insect. No doubt the same thing takes place with the other species. Query, in what state does the pigment forming the spots exist in the elytra, so as to be invisible till exposure to light has made it become black? Suppose it should be found to consist of nitrate of silver! I dare say you have observed that the insects of this genus have a strong smell, like opium when bruised. Many years ago, when a maker of morphia, I endeavoured to extract some from them, but could not detect the slightest trace of it; and yet in an old Italian work I find that a bruised ladybird is said to be a cure for the toothache.—*George Waring ; Shirehampton, Bristol, July 31, 1868.*

*Are Bees injurious to Fruit?*— We have had a great many gooseberries in our garden at Durham destroyed by the bees feeding on the inside of the berries, and leaving the empty skins hanging on the bushes, in the same way that wasps do. I have watched them feeding often. I think it must be on account of the dry weather.—*Fred. Raine ; Stilton House, Helmsley, August 20, 1868.*

[I have observed the same thing to a very injurious extent at Leominster, in Herefordshire, and believe it is very far from being an uncommon occurrence.—*E. Newman.*]



# THE ENTOMOLOGIST.

No. 58.]

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[PRICE 6D.

*Life-history of Ennomos fuscantaria.*—The eggs, which are of an apple-green colour, and shaped like a brick with the corners rounded, and with a raised rim round one of the ends, are laid in September, side by side, with great neatness, and form a regular series, all the ends having the rim being in one direction, which I have already described as being the case with the eggs of *Scoria dealbata* and some other moths. It is some years since my friend Mr. Doubleday showed me several of these strings or series of eggs, some of them containing as many as forty eggs, and all laid in a chip box; but in a state of nature the parent moth selects the smooth rind of the twigs of *Fraxinus excelsior* (common ash), on the leaves of which tree the larva seems almost exclusively to feed: a series of these eggs has a striking resemblance to a tapeworm in miniature; when the egg is about to hatch, which event takes place during the following May, and generally between the 20th and the end of the month, the colour, instead of becoming darker and of a leaden colour, so frequently the case with the eggs of *Lepidoptera*, assumes a paler and even a silvery tint. The young larvæ do not emerge simultaneously, but those even in the same string of eggs will frequently occupy ten days in their emergence, and this without apparent order: as they emerge they scatter themselves over the newly-expanded leaves of the ash, soon making their presence known either by small circular holes in the disk of the leaf, or semicircular excavations in its edge; they continue this habit as they increase in size, reminding the entomologist very forcibly of the cuttings made in the leaves of our rose-bushes during summer by the leaf-cutter bee: at the beginning of July the larvæ are generally full-fed, and then rest in a stiff and straight position, with the anterior part and legs held quite free, and the claspers firmly attached to the leaf-stalk of the ash, which

they a good deal resemble in size and colour. The head is nearly square; the face flattish, and porrected almost on a level with the axis of the body; the antennal papillæ are very long, parallel and porrected; the body is long and slender, almost uniformly convex above and rather flattened beneath; it has an evident lateral skinfold, extending its entire length, and containing the scarcely perceptible spiracles; the larva is also transversely wrinkled, and on each side of the ventral surface of the 7th segment are two small and approximate warts; the 13th segment terminates in two connivent conical points directed backwards; there are numerous fine hairs on various parts of the body, and more abundantly on the head. The colour of the head is apple-green, marbled with whiter or glaucous-green, and having pink antennal papillæ: the body is apple-green, thickly sprinkled with minute white dots; the dorsal is paler than the ventral surface, the paler area presenting the appearance of a broad somewhat glaucous stripe; the lateral skinfold is yellowish, and has a brownish cloud on each side of the 3rd segment; there is also a similar cloud below the lateral skinfold on each side of the 7th segment, and including the small warts I have already described; the legs and claspers are purplish brown; the anal points are tipped with pink. In the beginning of July, usually between the 1st and 10th, it spins, among the leaves of the ash, a light, open, network cocoon, very simple and slight, but also exceedingly strong and tough, and in this changes to a green pupa, in which state it remains until September, when the moth emerges. I am indebted to Mr. Wright for the loan of a full-fed larva, purposely to describe.—*Edward Newman*.

*A Life-history of Phyllotoma melanopyga, Klug.*—The parent fly, in most instances, deposits its egg on the tip of the leaves of *Salix caprea*, and never, so far as I have yet been able to discover, does she lay more than one egg on a leaf: occasionally she departs from her usual course of proceeding, and deposits her egg near the centre or at the base of the leaf. Shortly after it is born the little larva works its way into the interior of its food, and, lying on its back (this appears to be the usual mode of feeding adopted by the leaf-mining larvæ of the Tenthredinidæ), begins its larval life by making a small greenish blotch, which afterwards turns

brown. The larva has six thoracic, fourteen ventral and two anal legs, amounting to twenty-two in all: its head is shining brown, darker at the sides; the shining dark brown shield on the back of the 2nd segment, and the narrow dark-coloured shield on the same surface of the 3rd segment, are divided down their centres by the dorsal line; the ventral surface of the 2nd segment is decorated with a largish shining black plate; the 3rd and 4th segments have each a little shining black plate on them: the body is white, and the thoracic legs are circled with pale brown rings; ventral legs white, the two anal legs being partly surrounded by a dark brown band broader at each of its extremities; the 5th and 13th segments are entirely without legs. The larva, in order to keep its mine tolerably free from "frass," resorts to the curious expedient of loosening the upper and lower cuticle of the leaf; at its edge, and through the hole thus formed, it ejects its "frass" sideways out of its mine. During its lifetime the larva casts its skin several times, and by the time the fourth moult takes place it has robbed the leaf of a considerable portion of its cellular tissue: at times it eats all the parenchyma of the leaf, at others only about half of it is consumed; on some occasions the larva makes its way along one side of the midrib of the leaf, completely gutting that part: it then turns round and devours a portion, if not the whole, of the parenchyma situate on the other side of the midrib, the whole mined part of the leaf turning a dingy brown. At length, having arrived at maturity, the larva moults for the last time, and, like all the larvæ of this order of insects, after its last moulting it looks a very different creature; its mouth is pale brown, with darker markings; eye-spots black; head and body yellowish white, the markings on its pectoral and anal legs being of a very faint brownish tinge; its dorsal line is pale orange-yellow anteriorly, and green at its posterior; ultimately, however, the valves of the dorsal vessel discharge their contents, and the dorsal line is then lost to view. When about to enter upon its pupation the larva either bites a hole in the under side of its mine and descends to the ground to pupize, or else forms a circular-shaped cocoon within the mine itself: when the larva feeds out-of-doors on the willow-bushes it sometimes forms its cocoon inside the mined leaf, but in the majority of

cases when full-fed it quits its mine and falls to the ground, and pupizes there; when it is confined in a breeding-jar it only occasionally goes into the earth, in most instances constructing its cocoon in its mine. The larva when touched or annoyed has not the power of emitting a viscid fluid from its lateral pores. The perfect insects may be found amongst sallows about the 20th of May and during the month of June; the first larvæ begin feeding between the 20th and 25th of the following July, and from that time down to the end of October there is a constant succession of larvæ; the later-feeding larvæ do not produce perfect insects till the following season, and no imagos are developed after the early part of October. — *Charles Healy; 74, Napier Street, Hoxton, N.*

*A Life-history of Phyllotoma Tormentillæ.* — The perfect insects of this species are observed to frequent plants of *Tormentilla reptans* about the middle of March, and anyone examining such plants at the end of May or the beginning of June will be certain to see a number of minute black spots on the leaves; these spots are the birth-places of the little larvæ, discoloured by "frass:" as the larva grows older it forms a narrow, somewhat contorted, *Nepticula*-like mine, about a quarter of an inch in length, having a narrow track of "frass" running through its centre; by and by the larva begins to make a small greenish white blotch, and if we pluck one of the leaves so marked we shall find, on holding it up to the light, that the blotch contains a minute white-coloured larva, having a faint tinge of green imparted to its body by the green dorsal fluid; we shall further observe that the little creature has a pale brown-coloured head, that its mouth is darker and its eye-spots black, that the back of the 2nd segment is pale brown, that the larva feeds lying on its back, that it is possessed of twenty-two legs, namely, six thoracic, fourteen ventral and two anal, and that the 5th and 13th segments are apodal; it is also perceived that its ventral surface differs greatly from its dorsal, in its decorations the under side of the 2nd segment having a black somewhat X-shaped plate, its 3rd, 4th and 5th segments each possessing a small black circular-shaped plate, the articulations of the six thoracic legs being encircled with pale brown-coloured bands. At this period of its

growth the larva moults for the first time, and upon recovering from the weakening effects of the moult it recommences feeding with an increased appetite, and by so doing blotches the leaf considerably; its various markings, which at the period of moulting disappeared, now slowly reappear: continuing thus pleasantly occupied in feeding for a few days, the larva finds itself under the necessity of throwing off its integument for a second time; in a few days it becomes more and more robust, ultimately becoming full-fed; the green-coloured fluid contained in the dorsal vessel is then noticed to slowly subside, and the larva lies about sluggishly inside its mine: it soon afterwards sheds its skin for the third time: the little creature has then a very different appearance, its body being entirely spotless and of a pale yellowish hue, head pale brown, mouth a little darker, the dorsal vessel appearing only as a dull green cloud on the posterior portion of the body; the larva is then between four and five lines long: it then bites a hole in its mine, and enters the ground to pupize: at the proper time the imago cuts a circular hole at one end of its cocoon, and so gains its liberty. As previously stated, the larvæ are first observed feeding at the end of May; they then gradually increase in number by the 13th of June, becoming very abundant by the 21st, and imagos begin to appear about the 30th of the same month. The larvæ may be collected from the end of May up to the end of October, and the imagos breed freely till the end of September; after that date no more perfect insects come out, all the remaining larvæ holding over till the following season (March) before the imagos are developed. During the autumn months the larvæ are very abundant; on several occasions I have counted twelve and fourteen larvæ, all feeding at one time, inside various parts of the lobes of the leaf. When full-fed the larva always goes into the earth to pupize, but its parasite does not do so, preferring to spin its narrow cocoon inside the mined leaf of *Tormentilla reptans*. The larva possibly occurs wherever its food-plant grows: I have observed it abundant at Highgate, Hornsey, Hampstead, Norwood and Croydon. — *C. Healy*; 74, *Napier Street, Hoaxton, N.*

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*Entomological Notes, Captures, &c.*

*Notes from Southsea: Swarms of Coleoptera.* — During the past summer the abundance of the commoner species of Coleoptera and Lepidoptera along the shores of this island has been surprising, but as yet no rarities have fallen to my lot. The extreme heat we have experienced has no doubt much to do with this, and has apparently acted with a forcing, dwarfing influence on some of them. I have captured one specimen of *Chelonia caja*, the wings of which on one side were so much shorter than the others that the insect could not fly. All the specimens of the second brood of *Ephyra omicronaria* which I have taken are at least three lines less in expanse of wing than those I have previously met with. Specimens of the second brood of *Chelonia villica* were taken last week, and I have also young larvæ of the third brood of *Smerinthus Populi* feeding, all the pupæ I was reserving for next year having come to life. Along our beach a few days since I captured one specimen of *Lycæna Corydon* and one of *Arge Galathea*, which must have crossed over from the Isle of Wight. I also captured two specimens of *Polyommatus Agestis var. Salmacis*. *Acidalia promutaria* was very abundant on sand-banks, old posts, &c., resting with the wings fully expanded, and so sluggish that they permitted me to secure them without attempting to fly. *Selidosoma plumaria* (all males) appeared in abundance in a spot over which I had collected for years without meeting with it, and the lovely little *Homeosoma sinuella* was equally numerous. *Colias Edusa* is now to be seen along our downs, this being the third consecutive year in which I have taken it in this district. How is this to be reconciled with the "seven years" theory? On Portsdown Hill I also captured the first specimen of *Colias Hyale* I have ever taken. Coleoptera have been equally abundant. The evening of the 3rd of August was very lovely, but the heat was intense (90° Fahr.), although the sun had well nigh set. There was not a breath of wind sufficient to ruffle the surface of the sea (which appeared like molten lead), or to bend a blade of grass. I was sauntering along the sea-bank, enjoying the moist salty exhalation which was beginning to arise from the water, when my attention was attracted by the curious

appearance of the grass-stalks along the extreme edge of the bank: it was as if a chimney-sweep had shaken his soot-bag over it and blackened every blade, which were here and there also spotted with red. Closer examination showed me that this appearance was caused by minute insects, and a few strokes of the sweeping-net brought up more than a half-pint of small Coleoptera, a species of *Thyamis* and a minute *Olibius* being the most abundant; *Coccinella 7-punctata* and *C. 11-punctata* were there by hundreds, *C. mutabilis*, *C. variabilis* and *C. 12-punctata* well represented, with many other species not yet determined. I found that for more than a mile every stalk at the edge of the bank was thus tenanted, but what they were doing there I cannot imagine. I found it a somewhat difficult matter to examine and separate my captures, as the hoppers, in their haste to escape from the net, covered my face and hands until I was almost as black as the grass. I made up my bag and went home well satisfied with my evening's captures, but quite puzzled to account for the sudden appearance of such swarms of Coleoptera.—*Henry Moncreaff; Southsea, September 8, 1868.*

*Pieris Brassicæ and P. Rapæ settling on wet ground.*—In most summers, according to my experience, these butterflies may occasionally be noticed settling on the damp ground. I perfectly well remember on the 7th of last July, as the water-cart passed up the Hampstead road, noticing dozens of these two kinds of butterflies hurrying up from the adjacent streets and gardens (the trees and plants being thickly covered with dust), and settling down on the damp roadway to refresh themselves by absorbing the moisture, gently fanning themselves the while with their wings, just as we are accustomed to see them when engaged extracting the honey from a flower, and when disturbed by the passing vehicles they flew away for a short distance, and again alighted on the damp road.—*Charles Healy; 74, Napier Street, Hoxton, N.*

*White Butterflies settling on damp ground.*—In the August number of the 'Entomologist' (Entom. iv. 119) I saw a letter from one of your correspondents respecting white butterflies congregating together on a small spot of ground, and asking if other entomologists had observed anything of the kind. Allow me to state that during the first week in

July I was walking along the Ickleton Road, leading to Wantage, in Berkshire, when I observed, near the edge of a small stream, crowds of the common white butterflies; numbers of them settled on a small spot of damp ground, the rest hovering above as though waiting for their share of the feast, if such it was: I should think there must have been at least fifty. What made the circumstance the more strange was that when I approached close to them they remained perfectly still, without appearing in the least alarmed. I should very much like to know the reason of this singular occurrence.—*Lizzie C. Godley; Jersey, September 5, 1868.*

*Pieris Rapæ in abundance.*—On Saturday, July 11th, I observed eighty-seven specimens of *Pieris Rapæ* on fifty yards of railway-bank. I leave those who are great at statistics to show how many this would give for a mile and three-quarters, over which space they seemed equally abundant.—*E. Newman.*

*Pieris Daplidice at Margate.*—I have the most unquestionable information that two specimens of *Pieris Daplidice*, a male and female, have been taken above the cliff at Margate during the first week in August. The writer will not allow the publication of his name, as he does not desire applications for them.—*Id.*

*Colias Hyale at Aldeburgh.*—This day (August 15th), between the hours of 11 a.m., and 1 p.m., I captured no less than eighteen specimens of *C. Hyale* in a clover field near the church: they were all in the most beautiful and perfect condition possible, and amongst them are some good varieties. This butterfly is generally scarce in this neighbourhood. I am sorry to see it is attempted to make another species of *Colias* under the name of “*Helice*,” as it is evident, upon careful examination, there exists no sufficient difference between them to justify this alteration.—*N. Fenwick Hele, in the ‘Field.’*

*Colias Hyale near Gravesend.*—Mr. P. B. Smith, in the ‘*Entomologist’s Monthly Magazine*’ for September, records the capture of fifty specimens of *Colias Hyale* near Gravesend on the 5th of August.

*Colias Hyale near Ramsgate.*—Mr. A. H. Jones, in the same journal, records the capture of twenty-two specimens of



*Colias Hyale* between Ramsgate and Deal on the 10th of August.

*Colias Hyale near Birmingham.*—Mr. G. R. Kendrick, in the 'Entomologist's Monthly Magazine' for September, records the capture of a specimen of *Colias Hyale* in a clover field near Birmingham.

*Colias Edusa and C. Hyale at Deal.*—I have seen both in my garden, but not numerous.—*H. J. Harding.*

*Colias Hyale at Long Stratton.*—As I was driving to Ipswich on the 18th instant, I saw a fine *Colias Hyale*: it flew close in front of me, and went over the hedge. Yesterday I saw another in the orchard, but had not a net by me, and so was unable to catch it. The year before last I took one close to Flordon Station. I have never seen any at any other time here.—*J. Barnes-Johnson; Saxlingham Lodge, Long Stratton, Norfolk, August 28, 1868.*

*Colias Edusa at Scarborough.*—A specimen of *C. Edusa* has been seen here this autumn. It has not been noticed here for several years, and is of rather rare occurrence so far north.—*James H. Rowntree; Westwood, Scarborough, September 17, 1868.*

*Colias Edusa* var. *Helice* at Wallasey.—I captured, on the 11th of August, on the Wallasey sand-hills, a splendid specimen of *Colias Edusa* var. *Helice*; it is rather smaller and paler than those taken in the south.—*William Sello; Liverpool, September 18, 1868.*

*Colias Edusa* var. *Helice*, and *C. Hyale*, at Dover.—The beautiful *Colias Edusa* we met with frequently; our chief interest, however, was excited by the abundance of that rarer insect *C. Hyale*, and its still more uncommon relative *C. Helice*, and we captured a number of each.—*W. J. Sterland; Grove Road, Colney Hatch Road.—'Zoologist.'*

*Colias Edusa* var. *Helice* near Ipswich.—Some of your readers will be glad to know that this butterfly, very rare in these parts, may now be commonly seen in certain localities.—*Frederick Spalding; Woodbridge.—Id.*

*Colias Hyale near Norwich.*—Several specimens of this rare species have been observed around this neighbourhood during the past few weeks; two were captured at Hellesdon on the 18th of August, and two others, male and female, were taken by my friend Mr. T. Perry on the 7th inst., near

here; and I have no doubt I shall shortly hear of the capture of others.—*T. E. Gunn; Norwich, September 15, 1868.*

*Colias Hyale at Gravesend.*—The Rev. P. H. Jennings informs me that two lads took two hundred specimens of *C. Hyale* in one field at Gravesend.—*E. Newman.*

*Colias Hyale at Woodbridge.*—In August, *Colias Hyale* was common in the neighbourhood of Woodbridge. I took thirty-two specimens myself.—*E. C. Moor; Woodbridge.*

*Colias Hyale and Argynnis Lathonia at Colchester.*—Mr. W. H. Harwood, in the 'Entomologist's Monthly Magazine' for September, records the capture, on the 15th of August, of twelve specimens of *Colias Hyale* and one of *Argynnis Lathonia*.

[There are now sufficient records of the capture of *Colias Hyale* to show how abundant it has been this year.—*E. N.*]

*Argynnis Lathonia at Stowmarket.*—A few days since Mr. Wm. Baker, of Combs, was successful in capturing a beautiful specimen of *Argynnis Lathonia*, or Queen of Spain fritillary.—'Norwich Mercury.'

*Argynnis Lathonia at Canterbury.*—An account of the capture of thirteen *Lathonias* near Canterbury has been received, but is declined.—*E. Newman.*

*Argynnis Lathonia at Gravesend.*—As I was walking through a lucerne field on the 2nd of September, watching the now wasted and worn *Edusa* and *Hyale*, in the vain hope of meeting with *Helice*, I captured a beautiful female *Lathonia*. It flitted along in the quiet manner of *Euphrosyne* or *Selene*, and alighted on a clover blossom.—*D. T. Button; Gravesend, September 15, 1868.*

*Argynnis Lathonia at Croydon.*—I have heard on good authority that a specimen of *A. Lathonia* was taken at Croydon during the last week in August.—*E. Newman.*

*Argynnis Lathonia at Ramsgate.*—On the 7th of August I captured a specimen of *Argynnis Lathonia* at Ramsgate.—*W. G. Armstrong; 92, King's Road, Chelsea.*

*Argynnis Lathonia near Aldeburgh.*—About the 3rd of this month I had the extreme good luck to capture a *Lathonia*, or Queen of Spain fritillary. It was flying over some clover near Hazlewood. Having no net with me, I was compelled to knock the specimen down with my hat. Although considerably injured about the wings, I have care-

fully preserved this rare insect. A few days later another specimen was caught in Aldeburgh, near the church.—*N. Fenwick Hele, in the 'Field.'*

*Argynnis Lathonia near Margate.*—Two specimens of *Argynnis Lathonia*, both males, were taken near Margate during the second week in September. The writer of the communication declines to publish his name.—*E. Newman.*

*Vanessa Antiopa at Norwich.*—I caught two specimens of *Vanessa Antiopa* in the rectory garden at Sparham on the 3rd instant.—*Frank Norgate ; Sparham Rectory, Norwich, September 16, 1868.*

*Vanessa Antiopa at Chatteris.*—On the 6th of August my son caught a very fine specimen of *Vanessa Antiopa* hovering over a flower-bed in the garden.—*John Fryer ; Chatteris.*

*Vanessa Antiopa at Grundisburgh.*—A specimen of *Vanessa Antiopa* was taken on the 1st of September, by a child, while settled on a hedge at Grundisburgh: it is now in the possession of the Rev. J. B. Dobrée, of Grundisburgh, Suffolk.—*C. E. Moor ; Great Bealings, Woodbridge, Suffolk.*

*Hermaphrodite Specimen of Lycæna Alexis.*—I captured an extraordinary variety of *Lycæna Alexis* near this place on the 5th instant. The two wings on one side resemble those of an ordinary male, whilst the two on the other side are like those of an ordinary female *Alexis*, the characteristic markings of each sex being very distinct. Although I captured several more "blues," which were common in the locality, I did not succeed in procuring another specimen of this variety.—*James H. Rowntree ; Westwood, Scarborough.*

*Acronycta Alni and Sphinx Convolvuli at Great Malvern.*—I had the pleasure of taking a fine specimen of *Acronycta Alni* at sugar on the 4th of July last. I saw two specimens, and one the following evening, but only succeeded in taking one. I have been trying to find the larva in the locality, but to no effect. There have been two specimens of *Sphinx Convolvuli* taken in a conservatory at Malvern, both in a tattered condition.—*W. Edwards ; 1, Abbey Terrace, Great Malvern, September 19, 1868.*

*Chortobius Davus on Chat Moss.*—On September 6th I captured, on the wing, a fine female of *Chortobius Davus* on Chat Moss.—*Joseph Leigh ; 27, Tomlinson Street, Hulme, September 14, 1868.*

*Short duration of Smerinthus Populi in the pupa state.*—An occurrence similar to that noted by Mr. Mathews (Entom. iv. 133) has happened amongst my pupæ of the above-named insect this summer. About the end of July I took six larvæ, which all became pupæ within a day or two of each other. About the middle of August I was surprised to find a perfect insect had emerged. The other five are still in the pupa state.—(Rev.) P. H. Jennings; Longfield Rectory, Gravesend, September 14, 1868.

*Beautiful Variety of Smerinthus Populi.*—I have bred a variety of Smerinthus Populi of a reddish brown colour, striped with amber. The spots in the centre of the upper wing are pale amber instead of white. The under part of the body is green, resembling a poplar leaf; and under side of the wings tinged with a dull gold.—R. W. Ranson; Albert College, Framlingham.

*Sphinx Convolvuli at Aylesbury and Salisbury.*—Mr. J. J. Goodall states, in the 'Field,' that Sphinx Convolvuli has been more abundant than usual this year: he has frequently seen, at one point of view, more than a score skimming over a bed of common garden valerian: while the moths were busy on the wing, the caterpillars of the same species, full three inches and a half long and two and a half in girth, were feeding on the leaves below. Mr. F. R. M. Ratcliffe, in the same paper, records the capture of a specimen at Little Darnford, Salisbury.

*Sphinx Convolvuli at Gravesend.*—Sphinx Convolvuli has been common enough, in some cases causing great alarm by flying into sitting-rooms, attracted by the light. The extreme ignorance of the country folks on such subjects is surprising: I have had S. Convolvuli brought to me as a "locust," a "death fly," and a "mosquito;" and last night I was sent for to see a "chamelion" a lady had found in her breakfast-room, which was, as I had guessed, a specimen of S. Convolvuli. It has, I see, been common everywhere, and therefore scarcely worth especial notice.—D. T. Button; Gravesend, September 15, 1868.

*Sphinx Convolvuli at Sproughton.*—I have taken Sphinx Convolvuli at Sproughton: I found the specimen on a wall in the garden.—R. W. Ranson.

*Sphinx Convolvuli at Painswick.*—On the 18th of August

a friend sent me a fine specimen of *Sphinx Convolvuli*, captured in this neighbourhood. I have since heard of another specimen caught near Stroud.—*C. J. Watkins; King's Mills, Painswick, Gloucestershire, September 14, 1868.*

*Sphinx Convolvuli in Yorkshire.*—A very large specimen of this fine insect was brought me a few days ago. It had been found on a gravel road by a laundress when hanging out her linen.—*James Carter; Masham, Yorkshire.*—‘*Field.*’

*Sphinx Convolvuli near Aldeburgh.*—*Sphinx Convolvuli* has been remarkably abundant this summer, as also the larvæ of *Atropos*.—*N. Fenwick Hele; Aldeburgh, Suffolk.*—*Id.*

*Sphinx Convolvuli at Norwich.*—This uncertain insect, rare in some seasons and rather plentiful during others, has during the past month appeared rather abundantly in this locality. I have had as many as five specimens brought me, and have seen and heard of several others. Unfortunately most of the specimens were more or less damaged in capture; one of mine, a male, is, however, a most beautiful example.—*T. E. Gunn; Norwich, September 7, 1868.*

*Chærocampa Celerio at Eastbourne.*—A specimen of *C. Celerio* has been taken at Eastbourne this year.

*Deilephila lineata in the Isle of Wight.*—During the second week in August I caught two specimens of *Deilephila lineata* at Niton; both were taken while hovering over beds of geraniums on damp showery evenings shortly after dusk.—*J. Chatfield Clarke; Undercliff, Isle of Wight, September 14.*—‘*Field.*’

*Deilephila lineata at Weybridge.*—On the 1st of August I took a magnificent specimen of *Deilephila lineata* at St. George's Hill, Weybridge.—*R. Barton; Teddington.*—*Id.*

*Deilephila lineata at Torquay.*—On the 19th of July, at dusk, I had the good fortune to capture a specimen of *Deilephila lineata* in perfect condition; it was hovering over the flowers of the common scarlet geranium in my garden.—*Rev. Charles Grinstead; Torella, Torquay.*—*Ent. Mo. Mag. for September.*

*Deilephila lineata near Derby.*—A specimen of *Deilephila lineata* was brought to me alive on the 2nd of August.—*Henry Evans; Darley Abbey, Derby.*—*Id.*

*Deilephila lineata in Kildare.*—I captured on Saturday

evening (15th August) a fine specimen of *Deilephila lineata* ; it was hovering over Verbena flowers at about 8 p.m.—*John Douglas ; Kelkea Castle, Kildare.—Ent. Mo. Mag. for September.*

*Deilephila lineata at Cuckfield.*—Walking through a rough heathy field on the 9th of August, I started a hawk-moth, which flew a few yards, and being captured proved to be *Deilephila lineata* in good condition.—*T. Merrifield ; Belair, Cuckfield.—Id.*

*Stauropus Fagi near Norwich.*—At a meeting of the Norwich Naturalists' Society, on the 15th of June, Mr. H. Starling exhibited a fine female specimen of *Stauropus Fagi*, which he took while at rest on the trunk of an elm at Horsford, on the 1st of June. This rare insect has previously been taken in two other localities in Norfolk.—*T. E. Gunn ; Norwich, September 7, 1868.*

*Successful rearing of Bombyx Yama-mai.*—With reference to the subject of rearing this *Bombyx* (of the non-success attending which various records have appeared in the 'Entomologist'), I beg to offer my experience. Out of seven eggs given me by a member of the Eastern Entomological Society three only hatched, and one of these died the following day. The survivors I placed upon an oak twig inserted in a can of water in an airy breeding-cage, the top of the can being carefully covered to guard against the possibility of their coming to an untimely end by falling into the water. The oak with which I then supplied them being invariably dusty, I was in the habit of washing it before giving it them, and placing it in the cage without waiting for it to dry. I very soon noticed that they appeared to enjoy this wet food, crawling on it as soon as placed in the cage, and sucking the moisture from off the leaves. Seeing this, and thinking that a more easy access to water might prove beneficial, I removed the covering from the tin in which the twigs were placed, and, after doing so, repeatedly saw them descend the twigs to the water and enjoy a good drink. They then went through their various moultings, changed to pupæ, and ultimately emerged, on the 15th ult., two fine male specimens of *Yama-mai*. Now, whether or not the water may have been the cause of my rearing these insects successfully I cannot say, but of this I am pretty confident, that when easy access to water

at all times was afforded them they got on better than before ; and I therefore think it worth the attention of entomologists who may desire to breed this insect during next season. — *George Pratt ; Lower Clapton, September 19, 1868.*

*Bombyx Yama-mai.*—I received this year about 600 eggs of Yama-mai from Dr. Wallace: 262 hatched. Of these I only reared four to spinning, and one of these was soon after found to be dead; the others I sent to Dr. Wallace. Some of mine were kept in-doors, some in a greenhouse, and some out-of-doors on a living tree: these latter seemed to do the best. Those in the greenhouse were fed on either small oak trees in pots or branches of the same with their ends stuck in damp sand. Most of mine died between the third and fourth moults. I feel convinced that the hot weather this year has had a great deal to do with my failure, for last year I had fifty eggs, of which thirteen hatched; nine of them I reared, the other two having been killed by accident. — *W. A. Shoolbred, jun. ; Tettenhall Wood, Compton, Wolverhampton, September 18, 1868.*

*Mortality among Larvæ of Bombyx Yama-mai.*—Last May, Mr. Brown, of Cambridge, kindly sent me a few larvæ of *B. Yama-mai*. I kept them out-of-doors on an oak in my garden, a portion of them exposed to the full influence of the sun's rays, and the remainder in a position of partial exposure to the solar influence. They all died off, except six, which attained a considerable size, and were nearly an inch and a half in length. They suddenly appeared to leave off feeding, and gradually, one after another, hung dead from the twigs, the larva retaining its colour for some time, and the skin being almost empty and remarkably elastic. The leaves of the oak were not moistened, and very little dew or rain fell. Has any reader of the 'Entomologist' tried the effect of occasional damping of the food, and, if so, with what success? Great caution is necessary, I find, in moving the larvæ from the twigs, as they can retain a very firm hold of the stem (much more firm than *Smerinthus ocellatus* or any of the hawk-moths), and the task is one to be recommended as an exercise of patience. — *H. McDowall ; Kettering, August 3, 1868.*

*Dicranura furcula.*—I had a larva of this insect brought to me last week on some willow that I had sent for, for

feeding other larvæ. It had very recently hatched, and is growing rapidly. Is this one of a second brood? — *H. McDowall*; *Kettering, September 5, 1868.*

*Acidalia ornata double-brooded.*—A correspondent mentions (*Entom. iv. 126*) taking *Acidalia ornata* in August, inferring that it was retarded nearly two months by the excessive heat. I also found it plentiful in August, but it was the second brood. I found it common at the end of April and beginning of May. I have always found this species double-brooded, and this year most of the *Acidalidæ* have been so, although it is not their general habit. In my neighbourhood *A. ornata* feeds on *Origanum vulgare* (the common marjorum). — *D. T. Button*; *Gravesend, September 15, 1868.*

*Laphygma exigua at Peckham.*—On the 26th of August I found a specimen of this rarity on a gas-lamp near Peckham Rye.—*J. P. Barrett*; *29, Radnor Street, Peckham.*

*Larvæ of Noctua C-nigrum.*—I took a number of larvæ feeding on pea-stems: they have turned out to be *Noctua C-nigrum.*—*H. J. Harding.*

*Cirrhædia xerampelina bred.*—I have been fortunate enough to breed seven specimens of this insect. They emerged on the 19th and 20th of August, between 4 and 6 p.m. The pupa is remarkably tender; the most trifling injury causes it to “bleed” very copiously, and the profuse quantity of matter emitted from a wounded pupa is wonderful, taking into consideration its size. — *H. McDowall*; *Kettering, September 5, 1868.*

*Unwonted Visitors to Cocagne.*—On the 15th of August a young entomological friend observed a specimen of *Colias Edusa* flying along London Wall. About the middle of last May a fine male of *Gonepteryx Rhamni* was observed flying down the centre of Cheapside at about half-past 12 o'clock at noon. A moth, observed flying wildly about Thames Street in the middle of the day, on being captured turned out to be *Triphæna pronuba*. On the 18th of July I captured a specimen of *Sirex Gigas* on College Hill, Cannon Street, flying over a pipe of port wine. A specimen of the common cockchaffer (*Melolontha vulgaris*) was picked up in Cannon Street, stunned by coming in contact with the stone wall of the railway station. On the 16th of July, *Libellula depressa* was noticed hovering over the freshly-watered ground in the



East Road, City Road.—*Charles Healy*; 74, *Napier Street, Hoxton, N.*

*Bedellia somnulentella*.—This little larva, which in former years used to be so uncertain in its appearance, has of late become much more regular in its attendance, it having again put in an appearance this season at its old localities, but, so far as my observations extend, in greatly diminished numbers. Much to my surprise I met with some of the larvæ in Blackstock Lane, Highbury: this is certainly the nearest locality to London that I have yet met with them.—*Id.*

*Bees and Wasps drinking at a Pond*.—Just past the ‘Fox’ at Shirley, Surrey, on the road to West Wickham Wood, there is on the left-hand side of the road a little pond partly fenced round: all through the summer, every time I passed the pond, I noticed a number of bees, together with a few wasps, engaged imbibing the water from the pond itself, or else absorbing the moisture from the damp mould at the sides. On the 5th of August I spent some time in closely watching them, and, whilst so engaged, old Ben, a native of the neighbourhood, came to the pond to fetch some water: I asked him if he had ever previously observed them so engaged, to which he replied, “Not as I know on, but you see the weather is so howdaciously warm, the poor creeters be thusty.” I quite satisfied myself that their sole object in visiting the pond was for the purpose of drinking the water, as I noticed, in every instance, that as soon as each bee or wasp had satisfied its thirst it flew away with a cheerful hum, and so made room for others, there being a steady flow of thirsty souls to the little pond. Having only seen one species of bee frequenting the pond, I presume it is not the usual habit of the aculeate Hymenoptera to drink water.—*Id.*

*Premium for the Destruction of Wasps*.—Mr. J. F. Brockholes, of Cloughton Hall, near Preston, wishing to prevent or diminish as much as possible the ravages of the wasps during the summer among his fruit, recently offered a bonus of a penny per head on every wasp that was caught and killed within one mile of his residence. These for the most part would be female wasps which had survived the winter, and were preparing materials for their nests for the purpose of depositing their eggs. The children of the tenants and workmen on the estate, hearing of the proffered bonus,

rushed forth with ardour, and made a regular raid upon the wasps. In the course of a month the number of wasps killed was 2568, for which, at one penny each, the sum of £10 14s. has been paid by the squire. The children of one family destroyed 469, and those of another 364. The lowest number in the wasp "account" was 14.—‘*Evening Standard*,’ June 1, 1868.

*Lepidoptera bred, with some Dates, Localities and Food-plants.*—Since my last communication (*Entom.* iv. 126) I have bred the following species:—

Z. Trifolii. I have bred a series of large and beautiful specimens from larvæ kindly sent me by Mr. Buckler. They fed very freely upon knot-grass.

N. dictæoides. Bred from larvæ beaten from birch trees on Mickleham Downs.

C. diluta. Several, bred from larvæ found on oak in May.

X. semibrunnea. Bred from larvæ found on willow in Hackney Marshes, and on ash at Croydon, in July.

C. psitticaria. Twelve specimens, bred from larvæ beaten from oak at the end of July.

Apamea unanimis. I observe in your beautiful work on ‘British Moths’ that you give July as the time of appearance of this species. On referring to my diary I find I bred A. unanimis at the end of May or beginning of June for several years in succession; the greatest number in any one year was twenty-two. I first found the larvæ on grass while pupa-digging in April, on Hackney Marshes, at the roots of willows, and afterwards the pupæ spun up under the loose bark on the same trees.

E. palumbaria. I can fully confirm the remarks of your correspondent Mr. E. L. Ragonot (at p. 135), as to the food-plant of this species, having myself often found the larvæ on the furze on Dartford Heath (and afterwards bred the insects), when searching for that then rarity *Aleucis pictaria*.

Errata: at p. 127, line 6, the full stop should have been placed after the word “brood;” and at p. 128 the last word of line 24 should have been “three” instead of “these.”—*W. Machin*; 6, *Henry’s Terrace, Carlton Square, Mile End*.

*Arctia caja, variety.*—Mr. Eaton has bred a splendid variety of *Arctia caja*. The legs, head and antennæ are like the normal type; the superior wings are dark chocolate-

brown; hind wings black, edged with orange-brown, but the black spots are just visible; under side orange-brown.—*Garrett Garrett*; 172, *Woodbridge Road, Ipswich*.

*Abundance of the Larva of Bombyx Rubi at Cottingham*.—The larva of this insect is unusually common this year: I took in less than two hours upwards of a hundred feeding on the railway-bank close to Cottingham Station.—*Henry Wilkinson*; *Londsbrough Street, Hull, September 18, 1868*.

*Catocala Fraxini at Eastbourne*.—A very good specimen of *Catocala Fraxini* has just been taken at Eastbourne.

*Catocala Fraxini at Brighton*.—Mr. Bond has a specimen of *Catocala Fraxini* which flew on to a window at the 'Albion Hotel' at Brighton in August.

*Catocala Fraxini near Aldeburgh*.—Two specimens of *Catocala Fraxini* have occurred here this summer—one on August 14th, captured by a friend near the Low Lighthouse; the second I caught at sugar this day. They are both most splendid specimens.—*N. Fenwick Hele*; *August 21*.—'Field.'

*Catocala sponsa at Deal*.—Sugaring on an apple tree, I was surprised to see a fine specimen of *Catocala sponsa*, the first, I think, that was ever taken at Deal. By its splendid condition it could not have come far. There is no oak near.—*H. J. Harding*.

*Agrotera nemoralis*.—Mr. E. N. Bloomfield, in the 'Entomologist's Monthly Magazine,' records the capture of a specimen of *Agrotera nemoralis* on the 11th of June.

*Tryphæna interjecta at Wallasey*.—On the 19th of July, when sugaring at Wallasey, I took a nice specimen of *T. interjecta*. This insect is of rare occurrence in this district. *William Sello*; *Liverpool, September 18, 1868*.

*Xanthia gilvago near Liverpool*.—On the 12th instant, in Eastham Wood, I took a fine specimen of *Xanthia gilvago* at sugar,—a species hitherto unrecorded as occurring in this district.—*Id.*

*Oak-galls and Acorns on the same tree*.—I find that oak-galls and acorns are to be found on the same tree, and if you wish it I will send you a small piece with both on it. I have seen it on several trees.—*G. C. Bignell*; 8, *Clarence Place, Stonehouse*.

*Panorpa communis*.—In Blackstock Lane, Highbury, I met with a few of these insects: they are very partial to

sweets; I have often observed them, in the day time, on the trunks of the trees that have been sugared, busily employed absorbing the sugar. Very little is known respecting their habits: the suggestion has been thrown out that they probably feed on other insects, the correctness of which I can vouch for, from having on one occasion seen a male specimen of *Panorpa* feeding upon the body of a dead *Tipula*; I distinctly saw the *Panorpa* plunge its rostrum again and again into the abdomen of the *Tipula*, the contents of which it discussed with evident satisfaction.—*Charles Healy*.

*Acari in Cochineal*.—Inside the card-case you will find an instance of one insect feeding comfortably on another. Some very valuable lots of cochineal have been entirely converted into the useless mass of mites and *débris* of which the enclosed is a sample, and which may interest you or some of your microscopic friends.—*A. G. Latham; Manchester*.

*New or Rare British Beetles*.—1. *Phosphænus hemipterus*, taken in a garden at Lewes. 2. A species of *Omius*, taken in Hackney Marshes. 3. *Aphodiens villosus*, taken at Llandudno. 4. *Coccinella labilis*, taken near Whitstable. 5. *Ceuthorrhynchus Urticæ*, taken at Mickleham.—*Ent. Mo. Mag.*

*Preparatory States of the Common Cockroach*.—I shall feel much obliged if you will describe the larva and pupa condition of the above insect.—*Mary Melville; Rose Cottage, London Road, Brighton*.

[The larvæ of *Blatta orientalis* emerge from the aggregate mass of eggs (so peculiar to the genus *Blatta*, and so entirely different from all other egg-masses with which we are acquainted) in the perfect similitude of their parents, except as regards the entire absence of wings and wing-cases, which they do not acquire until after the last moult: the juvenile cockroaches eat and run from the very day of their extrusion from the egg-shell; the colour is very pale, the size very minute: the *Blatta* has no quiescent state.—*E. Newman*.]

*Name of a Coleopteron*.—Enclosed, in the quill, are some small beetles found on a tall plant with a square stem, the leaves somewhat like the common nettle. I should be obliged for the name of the beetles.—*Wm. Lister; Glaisdale*.

[The plant I suppose to be *Scrophularia nodosa*. The insect is *Cionus Scrophulariæ*. Both the plant and insect are common.—*E. Newman*.]

# THE ENTOMOLOGIST.

No. 59.]

NOVEMBER, MDCCCLXVIII.

[PRICE 6D.

*Life-history of Taniocampa rubricosa.*—The eggs are laid about the middle of April, on dock, and are hatched in a few days: the young larvæ continue feeding until the first or second week in June. When full-fed the larva rests in a straight position on the leaves or leaf-stalks of the dock, but rolls itself in a compact ring and falls to the ground when annoyed; the head is small but exserted; it is narrower than the 2nd segment, but never received into it; the body is velvety and obese; it is rather attenuated at the anterior extremity; the colour of the head prior to the last moult is dull brown, with a paler reticulated line down the middle of the face and another on each cheek; the body is umber-brown of two shades, which form bands across the back, the paler bands being at the interstices of the segments; the entire surface is delicately reticulated; there is a short white or yellow linear mark on each side of each segment; this is always in the dark bands, and above each of these marks are two round white dots; there is a bright continuous yellow stripe just below the spiracles, which are black, and which touch and seem to rest on this yellow stripe; the colour of the spiracles is always black; the ventral is rather paler than the dorsal area, and the legs and claspers are of the same colour. After the last moult considerable change takes place in the colouring; the bright yellow stripe in the region of the spiracles disappears, and its position is only to be traced by searching with a lens along the side, when a very indistinct stripe will be found just below the spiracles, except on the 2nd segment close to the head, where an ochreous-yellow line clearly marks the site where the bright yellow line commenced; the white or yellow linear spots on each side of the back remain very distinct; and in the space between each of these is a circular white spot; immediately above, it is of an intensely dark velvety brown, almost black; the ground colour below each linear spot is also very dark,

so that these markings are rendered very conspicuous; the dark colour of the back assumes somewhat the appearance of a series of inverted pyramids, the apices of which point towards the anal extremity. I am indebted to my kind friend Mr. Doubleday for a bountiful supply of these larvæ, which fed and throve vigorously on the common dock.—  
*Edward Newman.*

*Description of the Larva of Cerastis Vaccinii.*—When full-fed it rests in a straight position, but falls off its food-plant and feigns death when disturbed, lying on its back with the entire ventral surface exposed, and the head bent round on one side until it touches the fourth pair of ventral claspers; head shining, porrected in crawling, otherwise prone, much narrower than the body, and partially received into the 2nd segment: body very obese, velvety, slightly increasing in size from the 2nd to the 12th segment; 2nd segment with a semicircular dorsal plate, the truncate diameter of which is towards the head. The colour of the head is light brown reticulated with darker brown; 2nd segment with the dorsal plate dark brown, the anterior and lateral margins darker, the disk traversed by three pale longitudinal lines; dorsal surface of the body purplish brown, irrorated with indistinct pale markings, some of which are so arranged as to form three very narrow pale dorsal stripes, all of them indistinct, but the medio-dorsal one especially so; spiracles intensely black; ventral paler than the dorsal surface, semitransparent and tinged with green; legs greenish brown, tipped with pale brown; claspers concolorous with the ventral surface. Feeds on *Ulmus campestris* (common elm).—*Id.*

*Description of the Larva of Odontia dentalis.*—The head is very small, much narrower than the 2nd segment; it is porrected, obscurely triangular, and has a very flat face: the body is very obese, somewhat shuttle-shaped, the skins transversely folded, and the entire appearance that of a fat full-fed maggot; the 2nd segment has a broad dorsal plate, very scabrous, and divided by a slender median longitudinal line; and on each side of the 2nd segment there are also two scabrous spots; the dorsal surface of the 13th segment is covered with a scabrous plate; the legs are short, pointed and very horny: the ventral claspers are short and mode-

rately distant; the anal claspers are close together and very small. The colour of the head and of these plates is black; of the body pale yellowish white, indeed a colour commonly recognised as proper to maggots, whether of wasps, nut-weevils or others; every segment has a number of wart-like spots, each of which emits a small hair or bristle; these warts are black, and form several longitudinal series the whole length of the larva. It feeds on the stem and leaf-stalks of the lowest and largest leaves of *Echium vulgare* (viper's bugloss), thus causing the leaf to wither and curl up; when the leaf is in this state the larva joins the edges together by silken threads, forming little retreats, in which it changes to a pupa; from four to six of these are often found on one plant, and always singly: the interior of these retreats is covered with a silken web of the most delicate whiteness, and on this the larva reposes for several weeks. The perfect insect first makes its appearance in July, but there is a continued succession from that date to the end of October. I am indebted to Mr. Porritt, of Huddersfield, for these larvæ, and for much valuable information respecting the life-history of the species.—*Edward Newman.*

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*Entomological Notes, Captures, &c.*

*Papilio Podalirius on damp ground.* — I fancy the habit of settling on damp ground in hot weather is a usual one with most kinds of butterflies. While staying on the Lake of Como, on the muddy remains of a puddle near the Lake, early every morning there might always be seen plenty of *P. Podalirius*, with proboscis inserted in the mud, so eagerly engaged that I caught more than one by hand. *P. Machaon* and some *Lycænas* occasionally visited the uninviting spot. *Macroglossa Stellatarum* was in great abundance, hundreds flitting and darting wherever there were flowers.—*W. Douglas Robinson; Orchardton, Castle Douglas, N.B., October 11.*

*Papilio Machaon in Kent.* — A young lady, a near neighbour of mine, this summer took *P. Machaon* in a clover field. I believe the larva of *Machaon*, or rather the pupa, was put down in the Sturrey marshes in some numbers experimentally a few years back. These marshes are some eight miles off.

Is it possible this was one? — *W. Oxenden-Hammond*; *St. Alban's Court, October 8, 1868.*

*Singular Variety of Colias Edusa.* — A fortnight ago I captured, at Bekesbourne, near Canterbury, a variety of *C. Edusa* which I have never seen or heard of in any book or cabinet: it is a perfect specimen, but rather smaller than the usual dark variety; but the chief feature is the pale drab or cinnamon-colour in place of the dark border of the male insect. — (*Rev.*) *Thomas Hirst*; *Cathedral Precincts, Canterbury, October 10, 1868.*

*Colias Hyale at Leaford.* — On the 14th and 15th of August I took five or six specimens (in fine condition) of this butterfly, and no doubt should have been more successful had I searched specially for them. Of *C. Edusa* I saw very few, nor did I see a specimen of the *var. Helice*, both of which were common last year on the Sussex downs. — *James Dutton*; *Theresa Place, Hammersmith.*

*Colias Hyale at Witham.* — I took a fine specimen here, this morning, of *C. Hyale*. — *W. D. Cansdale*; *Witham, September 24, 1868.*

*Argynnis Lathonia and Colias Hyale at Southend.* — A young friend of mine, spending his holidays at Southend, had the good fortune to take about fifty specimens of *C. Hyale* and three fine *A. Lathonia*: two of the last-mentioned I have had the pleasure of adding to my collection. — *J. Russell*; 10, *St. James's Terrace, Roman Road, Islington.*

*Argynnis Lathonia at Canterbury.* — On the 2nd of August I captured two specimens of this fine insect two miles from here; on the 1st of September three very fine ones at Brighton; on the 3rd of September five, on the 4th one, and on the 6th two, on Swarting downs; total thirteen, nearly all in good condition. My brother and myself took fifteen in the same localities twelve years ago; since then, however, it has never been seen until this season about these parts. — *George Parry*; *Church Street, St. Paul's, Canterbury.*

[This communication was received in time for insertion last month, since which I have received the three letters which follow, written to corroborate Mr. Parry's statement. — *E. Newman.* "I have seen an account in the 'Entomologist' concerning the capture of thirteen specimens of *A. Lathonia*, which you seem to think is false; but I beg to



state that I saw two of them alive on the 6th of September, and had them in my hand. — *E. Edney; 7, Military Place, Canterbury, October 10, 1868.* “I hear my parishioner Parry cannot get the credit for his lucky captures this autumn; I allude to the Lathonias: but it is nevertheless true; and, moreover, I know of two boys who each took one in the same week at Bridge Hill, near Canterbury. I did not see the insects alive, but I saw them soon after. I have examined several witnesses who saw two of them alive, and I am convinced they were British. — (*Rev.*) *Thomas Hirst; Cathedral Precincts, Canterbury, October 10, 1868.*” “With regard to Parry’s Lathonias, he wrote to me, I think in August, and told me he had taken two specimens, and that they were alive. I sent my servant to see them, and he brought me back the best of the two, a large female. It was dead, but barely so, and evidently had not been dead above an hour or two. The eyes were translucent, and all the juices and viscera of the body perfectly fluid, soft and fresh. I have not a shadow of a doubt as to the truth of this capture. — *W. Oxenden-Hammond; St. Alban’s Court, October 10, 1868.*”]

*Argynnis Lathonia at Walmer.* — My friend Mr. Smith captured a fine specimen of *Argynnis Lathonia* at Walmer. *Colias Hyale* was also in abundance there. — *F. O. Standish; 2, Alfred Cottages, Warner Road, Camberwell.*

*Argynnis Lathonia near Deal.* — Two specimens of *Argynnis Lathonia* have been taken this year between Dover and Deal, and a third was seen near Deal. — *H. C. Leslie, in ‘Science Gossip’ for October.*

*Argynnis Lathonia at Colchester and Folkstone.* — The capture of two specimens are recorded in the ‘Entomologist’s Monthly Magazine’ for October — one by Mr. Harwood, at Colchester; the other, on the 7th of September, at Folkstone, by Mr. Purdey.

*Argynnis Lathonia at Scarborough.* — A specimen of *A. Lathonia* was caught here, by Mr. C. C. Smith, on Oliver’s Mount, on the 26th of September last. — *S. Doncaster; Oliver’s Mount School, Scarborough, October 3, 1868.*

*Vanessa Antiopa at Sproughton, near Ipswich, Suffolk.* — I had the great success of capturing a beautiful specimen of this valuable insect. I first saw it on the bank of a ploughed

field; from thence it flew on to a hedge, and at last settled on an oak tree, where I caught it.—*R. W. Ranson; Sproughton, October, 1868.*

*Vanessa Antiopa at Tadcaster.*—A fine specimen of *Vanessa Antiopa* was taken in Nunappleton Park, on the 2nd of October, by Mr. F. G. Milner. His youngest brother brought it to me alive, and it is now on my setting-board.—*J. W. Wright; Holme Green, Tadcaster, October 7, 1868.*

*Sphinx Convolvuli caught by a Cat.*—Mr. Gosse relates, in 'Science Gossip,' that he saw a cat capture, with the utmost ease, a specimen of *Sphinx Convolvuli*; and Mr. Wright, of South Shields, records a similar occurrence.

*Sphinx Convolvuli at Cromer.*—During the month of August a large *Sphinx Convolvuli* flew into the dining-room of the vicarage at Cromer, attracted by the light. Everybody gave chase to it, and consequently when caught it was damaged.—(*Rev.*) *J. Barnes Johnson; Saxlingham Lodge, Long Stratton, Norfolk, October 5, 1868.*

*Chærocampa Nerii at St. Leonard's.*—I have just had a fine specimen of *Chærocampa Nerii* placed in my hands to set: it was caught by Mrs. Wood in her garden at North Lodge, about a mile from the sea.—*J. S. Bowerbank, LL.D.; 2, East Ascent, St. Leonard's-at-Sea, October 12, 1868.*

*Deilephila lineata near Marlborough and in the Isle of Wight.*—The capture of three specimens is recorded in the 'Entomologist's Monthly Magazine' for October—one on the 26th of August, in a stubble field near Marlborough, by some children: two near Newport, in the Isle of Wight, by Mr. E. H. Moberly, on the 11th and 15th of August.

*Deilephila lineata at Brighton.*—When staying at Brighton at the end of August, I saw a live specimen of *D. lineata*, bred by Mr. Tidy from a larva found near Brighton.—*C. Tester; Sherlock Forest, Balcombe, Cuckfield, Sussex.*

*Deilephila lineata at Deal.*—A specimen of *Deilephila lineata* was caught this year flying over a chalky bank at Walmer Castle, and two others flying in a potato field near Deal Castle.—*H. C. Leslie, in 'Science Gossip' for October.*

*Deilephila lineata in Lancashire.*—Mr. John Taylor captured at rest, on Sunday, September 26th, a specimen of the striped hawk-moth (*D. lineata*). This beautiful moth is a very rare visitor in this country. Most of the specimens in

our cabinets are continental ones. The above was exhibited alive, in good condition, at the Middleton and Grange Entomological Society's monthly meeting, and consequently is a British specimen.—*John Thorpe ; Church Street, Middleton.*—‘*Science Gossip.*’

*Chærocampa Celerio at Peckham.*—One of my sons has just taken a specimen of *Chærocampa Celerio* on a fence in my garden.—*Benjamin Standish ; Southampton Street, Camberwell, October 2, 1868.*

[I saw this insect alive.—*E. Newman.*]

*Chærocampa Celerio at Huddersfield.*—On the 26th of last month (September) a specimen of *Chærocampa Celerio* was taken by a woman in one of the streets of this town, and is now in the possession of Mr. James North, of Newsome. Unfortunately the captor did not know its rarity ; so that by the time it came into “proper hands” it had become too much damaged to be fit for a cabinet specimen.—*G. T. Porritt ; Clare Hill, Huddersfield, October 19, 1868.*

*Chærocampa Celerio at Dover.*—Another specimen of *Chærocampa Celerio* was taken at Dover during the month of September, and several of *Sphinx Convolvuli*, two of which I have also taken in my own garden at the flowers of marvel of Peru.—*H. J. Harding ; 131, Lower Street, Deal.*

*Chærocampa Celerio at Brighton.*—On the evening of the 20th of September, in a garden near Montpelier Crescent, and over a bed of *Verbenas*, a fine specimen of *Chærocampa Celerio* was taken by a son of Mr. Swaysland, of the Queen's Road, Brighton, at about 6.15. Since then, in the same garden, and over the same flowers, he has taken four others ; *viz.*, September 23rd, a very badly rubbed specimen ; 26th, one much rubbed ; 29th, a very good one ; October 10th, not only the best of all, but a very perfect insect. The time in each case was between lights, the evenings windy, and they all flew against the wind. Two *Sphinx Convolvuli* have been taken in the same garden.—*T. W. Wonfor, Hon. Sec. Brighton and Sussex Natural History Society, Brighton.*

*Chærocampa Celerio at Birmingham.*—I have just finished “setting” a most splendid specimen of *Chærocampa Celerio*, which was caught yesterday in a shop in one of the busiest thoroughfares in Birmingham, and from the perfect condition I should imagine the larva had fed somewhere near. Several

fine specimens of *Sphinx Convolvuli* have also been taken in September. — *Frederic Enock*; 75, Ryland Road, Birmingham, October 3, 1868.

*Macroglossa stellatarum in Scotland.* — I believe that the occurrence of *Macroglossa Stellatarum* in Scotland is uncommon. About the middle of last month an intelligent neighbour of mine captured one in his garden, and kindly brought it to me, as being an insect which he never saw before, and one likely to be welcomed as an addition to my collection, of which it now forms a part. A few days afterwards another of the same species made its appearance in the same garden. — *Wm. Cameron*; *Balquhidder, Perthshire, September 24.*

*Unusual period of the Emergence of Orgyia pudibunda.* — Is it not unusual for *O. pudibunda* to come out at this time of the year? I fed a quantity of the larvæ this summer, and to my surprise they are coming out now, in the month of October. — *H. Wilkinson.*

[Yes: the larvæ occur full-fed in August and September. — *E. Newman.*]

*Rearing of Yama-mai.* — Through the kindness of Mr. Gascoyne, I received fifty eggs of the above in March last, which, in spite of all I could do, began to come out in that month; and as they were oak-feeders, and the oak I was forcing was not ready, I was severely put to it. I tried them with evergreen and other fancy oaks, but they continued to hatch and die. I mentioned my dilemma to my friend Mr. Talbot, of Wakefield, who recommended me to try the apple, which was just bursting into leaf: I did so, and succeeded in rearing two males and one female, and have no doubt, had I tried it sooner, I should have reared a good many more. I subsequently got a hundred eggs of Dr. Wallace, of which more than fifty came out, and as my oaks were now in splendid leaf I placed them on it as they hatched, but only to find them hanging loose and dead after the first and second moults. But *nil desperandum* is my motto, and I intend going in again for Yama-mai next season, and shall feed them upon nothing but the apple tree. — *James Ellis*; *Phurlwill Hall, Balley, Yorkshire, October 20, 1868.*

*Economy of Endromis versicolor in Confinement.* — A great deal has already been written on the habits and transformation of this beautiful insect, both at large and in

confinement. I have therefore little to add. My present object is, however, to state that it sometimes remains two winters in the pupa state: this perhaps has been noted years ago, but it is new to me. At page 184, vol. ii. (1865), of the 'Entomologist,' is a most interesting history of the changes of this insect, by Mr. Gascoyne, of Newark. Having a great wish to rear the Kentish glory through all its stages, I wrote to that gentleman, asking for some eggs, which he very kindly sent me. These began hatching on the 2nd of May, and when all came out they were placed out-of-doors, where they fed and did well: in the middle of June they were placed in a breeding-cage in an out-house by an open window, and by the 28th of the same month eleven fine larvæ had disappeared in the moss placed on the mould. At the end of February, 1866, the first pupa protruded from the cocoon: this to me was a most interesting sight, and one I had never before witnessed. Two more appeared in a few days, and on March 26th two male moths came out; on the 10th of April a third, also a male. Not being very well satisfied with this produce, I examined the moss, and found one pupa looking alive and well; I returned it, and did not again interfere with it. In the spring of 1867 I was rewarded by four perfect moths making their appearance. One male came out on March 25th, one male on the 31st, and two females on the 1st of April. One pair were allowed to copulate; the female deposited eggs, and larvæ again hatched. On the 16th of March, 1868, one male appeared, and on the 19th one female. In each year the males were the first out. — *J. Pristo; Alverstone, Whippingham, Isle of Wight, October 7, 1868.*

*Catocala Fraxini at Ipswich.* — Mr. Balding records, in the 'Daily News,' the capture of a specimen of *Catocala Fraxini* at Ipswich: no date is given.

*Catocala Fraxini at Birkenhead.* — Mr. Ragonot records, in the 'Entomologist's Monthly Magazine' for October, the capture of a specimen at sugar, in Eastland Wood, on the 12th of September.

*Catocala Fraxini at Eastbourne.* — I was fortunate in becoming possessed of a fine specimen of this rare insect, which was captured by a visitor on the 20th August. The moth flew into an empty house on the Marine Parade, where

the gentleman and a friend were residing, at 9 a.m.: the latter put his hat upon it, and impaled it with a piece of hair-pin, and in that state brought it to my brother to have it killed. A lad (the son of a fisherman), on seeing the moth, said, "Two just such moths flew into our boat when off at sea," one of which he put into his pocket (from which it escaped), and the other he caught and took home, when his father obliged him to let it go. — *James Dutton*; 2, *Theresa Place, Hammersmith, October*, 1868.

*Chesias spartiata*. — I have just bred a large and perfect specimen of this insect from a larva collected at Shirley in June, 1867. I am aware that some of the Pseudo-Bombyces and many of the Noctuxæ remain in pupæ for nearly two years, but I do not remember to have seen it recorded that any of the Geometræ remain for a like period. I have collected no broom-feeding larvæ this year, so there is no doubt about the matter. — *W. Machin*; 6, *Henry's Terrace, Carlton Square, Mile End*.

*Epunda lutulenta* at *Gravesend*. — I have taken both male and female specimens of *Epunda lutulenta* at ivy-blossom during the third week of September; all, however, were more or less wasted. — (*Rev.*) *P. H. Jennings*; *Longfield Rectory, Gravesend, October 19*, 1868.

*Phibalapteryx lignata* at *Deal*. — I have been fortunate in taking *P. lignata* at Deal, the first time it has occurred in this neighbourhood. — *H. J. Harding*; 131, *Lower Street, Deal*.

*Sericoris Euphorbiana* bred. — While collecting at Folkstone, in company with Messrs. Holyday and Purdy (the latter of that town), to whose kindness I am indebted for taking me to the locality for *Euphorbiana*, Mr. Holyday drew my attention to a Tortrix larva in *Euphorbia amygdaloides*, which I at once pronounced to be *S. Euphorbiana*, and commenced filling a tin box with the tops of the plant, each of my companions following suit: hence Mr. Purdy bred the species. The larva is easily detected in *Euphorbia amygdaloides* by the central leaves being spun together: it feeds internally in the stem for about an inch or so, and when collected the tops of the plant should be picked off a sufficient length, or the larva may be left behind. — *F. O. Standish*; 2, *Alfred Cottages, Warner Road, Camberwell*.

*Cochylis gigantea*. — The larva of this species feeds in the seed-heads of *Centaurea nigra*.—*F. O. Standish*.

*Eupœcilia subroseana* bred.—While collecting *Eupithecia* larvæ off *Solidago Virgaurea* (golden rod), I obtained a few small *Tortrix* larvæ from off the flowers of the same plant, from which I bred *E. subroseana*: there was also a similar larva, but darker in colour, on the flowers of *Senecio Jacobæa* (common ragwort); and also a bright yellow one on *Linaria vulgaris* (yellow toad-flax): each of the larvæ appear to pass through the winter before changing to pupæ, thereby increasing the difficulty of rearing them. Is it possible that the two last are species not yet discovered? The hint may be of service.—*Id.*

*Gracilaria syringella*. — The esteemed conductor of this journal, in his analytical notice (vol. ii. p. 15) of the eighth volume of the ‘Natural History of the Tineina,’ remarks, in reference to a statement contained in that volume, “There appear to be two broods of the insect in the year:” he is inclined to think that, instead of confining the number of broods to two, there are half a dozen. Having paid considerable attention to the life-history of this little garden pest, I may perhaps be permitted to relate my experience. First, I should state that my observations were carried on through the season of 1864, and that my attention was almost wholly confined to the lilac trees growing in the garden of the house in which I reside. On the 13th of May the imagos were first noticed flying about the lilacs: the earliest signs of the larva’s presence in the leaves was detected on the 23rd of the month; they then rapidly increased in numbers from day to day, and by the 23rd of June most of this brood of larvæ were snug in their cocoons, but even as late as the 28th of the month some few were observed feeding. On the 12th of July the second brood of imagos began coming out, and remained about the lilacs up to the 8th of August, after which date they disappeared. The second brood of larvæ put in an appearance on the 25th of July; and while these individuals were feeding, the second brood of imagos were noticed, up to the time of their disappearance, sitting occasionally on the mined leaves: some of them were observed at times to be very sluggish, remaining on one spot for two or three days and nights together. When this insect is about

settling down to rest, it is often observed, after dropping one antenna, to revolve the other with considerable velocity for a few seconds before finally laying it down. The second batch of larvæ kept on feeding during the greater part of August, and produced the first specimens of the third brood of perfect insects on the 9th of September: by this time the lilacs had become almost denuded of their leaves, and such as remained were nearly all deprived of the greater portion of their cellular tissues, and left in a contorted and twisted-up posture, partly filled with "frass" and cast-off skins, and becoming saturated with rain: the trees presented a most dismal and unsightly appearance, being perfect scarecrows of their former selves as they appeared in their beautiful green spring garb. My observations were therefore brought to a stand-still. Early, however, in the month of October, I met with the larvæ in abundance, feeding on privet growing along the summit of the western bank of the Regent's Canal, in the neighbourhood of Islington: these I presume must have constituted a third brood of the larvæ; they were exceedingly numerous, and at some parts of the privet hedge they had spun quite a mass of white silken webbing, more after the fashion of the Hyponomeutidæ than that of a Gracilaria larva. The above observations would seem to prove the existence of only three broods of the perfect insects, and three broods of larvæ. I should, however, like to canvass the opinions and observations of others, as it is a topic well worthy of ventilation, particularly so as regards the best means of keeping this destructive little creature in check, and thus prevent its ravages to a certain extent. The cause of their appearing in such vast numbers in the larva state is doubtless owing to the comparative immunity they enjoy, in town gardens, from the attacks of the Ichneumonidæ; they do not appear so abundant in gardens out of town, where no doubt their natural enemies soon thin their ranks. I have bred hundreds of the perfect insects, but have as yet failed to breed any parasites, having only once seen one larva affected by a parasite; I remember that in that case the parasitic larva waited until the *G. syringella* had spun its cocoon before it vacated the body of its prey, in the centre of whose cocoon it also spun its own.—*Charles Healy; 74, Napier Street, Hoxton, N.*



# THE ENTOMOLOGIST.

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## *Captures of Lepidoptera in Morayshire.*

By GEORGE NORMAN.

It will be seen from the following list of captures that my attention has been exclusively directed to the Noctuæ. A few other insects certainly were noted, but mostly common species; for instance, *Chelonia Plantaginis* and *Arctia fuliginosa* were both common enough, while in the Altyre Woods *Endromis versicolor* was seen in great abundance; I succeeded, however, in capturing only four specimens, one male and three females, the latter sitting quietly on the bare birch twigs in April. The males were far too lively for me, although I have known the day when I could have run them down. Some eggs were procured, but, owing to my want of knowledge in rearing the young larvæ, only one lived into the pupa state. *Erebia Medea*, *Hipparchia Semele*, *Chortobius Davus*, *Pyrameis Cardui*, *P. Atalanta*, *Argynnis Selene*, *A. Euphrosyne*, and *Thecla Rubi*, were all abundant in suitable localities; and *Vanessa Io* was, I believe, seen on one occasion in Altyre Forest. *Smerinthus Populi* abounded in the larva state, those found on *Populus alba* wonderfully matching the colour of its food-plant, being of a pale glaucous-white hue, sometimes blotched with red. *Sphinx Convolvuli* was, I believe, frequent throughout the county; I had three specimens sent me, which had been captured hovering over *Petunias*. *Macroglossa Stellatarum* was observed on several occasions in similar localities. *Amphydasis betularia* and *Odontopera bidentata* were both very abundant. All the British species of *Hepialus* were taken, eight specimens of *H. velleda* occurring at rest in the crevices of birch trees in Altyre Woods. *Cossus ligniperda* larvæ were abundant all over the country, doing great mischief to the birch and oak trees. I do not recollect whether a *Cossus*-infested birch has been before noticed as an excellent trap for Noctuæ: one small tree on my hunting-ground was nightly

visited by hosts of moths, and what is very remarkable, certain species occurred there and nowhere else; for instance, I only took five specimens of *Noctua glareosa*, and every one was taken from this small wounded birch, which also yielded in one night six specimens of *Epunda nigra*. Another year I intend collecting a pint or two of the sap in the early spring, to mix with my sugar as an improvement. The larvæ of *Bombyx Quercus* were very abundant on heather; one specimen only, out of some twenty or more, yielded the perfect insect on the 20th of July; the others are all now in the pupa stage. One pupa of *Pœcilocampa Populi* was taken at root of poplar. *Saturnia Carpini* was very common, but smaller and less richly coloured than Yorkshire specimens. *Chesias spartiata* was very abundant.

The subjoined list of *Noctuæ* will show that this locality is a promising one. Being, however, my first season's collecting, after an interval of some twenty-five years, I was imperfectly read up in the modern system of collecting larvæ and pupæ; otherwise the list of species might have been considerably augmented. A notable fact was the remarkable earliness of most of the insects, which, with few exceptions, were fully four or five weeks in advance of their usual time of appearance, owing, no doubt, to the hotness of the season. The date is that on which the first specimen was observed.

*Thyatira batis*. 20th June. Scarce. Two specimens at raspberry-blooms.

*Cymatophora duplaris*. 27th June. Frequent at sugar.

*C. or.* 20th June. Several at sugar.

*C. flavicornis*. 30th March. At rest. Many larvæ afterwards, on birch.

*Acronycta tridens?* 27th June. At sugar. I suspect I am right in referring this to *tridens*, being darker than *Psi*.

*A. Psi*. 4th July. Not uncommon at sugar. At rest on birch trees.

*A. leporina*. 25th May. At rest in Altyre Forest. Afterwards several larvæ were taken from birch.

*A. Ligustri*. Bred from pupæ found on ash trees.

*A. Rumicis*. 25th May. Two at rest.

*A. Salicis*. 17th June. Rare at sugar.

*Acronycta Myricæ*. 16th June. Rare. One specimen at rest near Dallas.

*Leucania lithargyrea*. 27th June. Very abundant at sugar.

*L. conigera*. 4th July. Not uncommon at sugar, and flying over *Lychnis vespertaria*.

*L. impura*. 4th July. Not common at sugar.

*L. pallens*. 3rd July. Very abundant at sugar and flowers.

*Hydræcia ncticans*. 7th Aug. Not uncommon at sugar.

*H. micacea*. 2nd Aug. Several specimens at sugar.

*Xylophasia rurea*. 25th May. Common at raspberry-blooms and sugar.

*X. polyodon*. 23rd June. Very abundant at sugar and at rest.

*Charæas Graminis*. I took this, last autumn, on ragwort.

*Luperina testacea*. 18th Aug. Abundant at light.

*Mamestra anceps*. 25th June. Not unfrequent at sugar.

*M. brassicæ*. 23rd June. Occasionally at sugar and at rest.

*Apamea basilinea*. 2nd June. Very abundant at raspberry-blooms.

*A. fibrosa*. 29th July. Rare at sugar.

*A. oculea*. 2nd July. Swarming at sugar.

*Miana strigilis*. 6th July. Not common at sugar.

*M. fasciuncula*. 11th June. Very abundant at sugar.

*M. literosa*. 25th July. Common at sugar.

*Caradrina cubicularis*. 19th June to October. Over flowers, at sugar, and swarming in hay-fields.

*Rusina tenebrosa*. 7th June. Very common, flying over raspberry-blossom, also at sugar.

*Agrotis valligera*. 27th July. Not abundant at sugar. Several beautiful varieties.

*A. suffusa*. 24th July until October. Not uncommon at sugar.

*A. Segetum*. 25th July. Not common at sugar.

*A. lunigera*. 28th July. Rare at sugar.

*A. exclamationis*. 24th June. Not common at sugar.

*A. corticea*. 26th June. Not common at sugar.

*A. nigricans*. 27th July. At rest and at sugar, not rare.

*A. Tritici*. 26th July. Frequent at sugar.

*A. agathina*. 14th Aug. Not uncommon on heaths, but very difficult to take.

*Agrotis porphyrea*. 8th June. Swarming over heather. Pupæ also abundant under moss on heaths.

*A. præcox*. 7th Aug. Rare at rest.

*A. pyrophila*. 1st July. Rare.

*Tryphæna janthina*. 25th July. Not uncommon, both at lime-blossom and at sugar.

*T. fimbria*. 18th July. Common at sugar.

*T. subsequa*. 1st Aug. Not uncommon at sugar. Unfortunately I did not recognize the moth in time to take many specimens. I saw five on one round, but did not box one.

*T. orbona*. 16th June. Swarming at sugar, varying both in colour and markings to an extraordinary degree.

*T. pronuba*. 23rd June. Abundant at sugar.

*Noctua glareosa*. 26th Aug. Several at a birch tree pierced with *Cossus*.

*N. depuncta*. 24th July. Not uncommon at sugar.

*N. augur*. 1st July. Frequent at sugar.

*N. plecta*. 21st July. Rare, flying over grass.

*N. C-nigrum*. 22nd June. Not uncommon at sugar.

*N. triangulum*. 4th July. Rare at sugar.

*N. brunnea*. 12th June. Frequent at raspberry-blooms and sugar.

*N. festiva*. 26th July. Not uncommon at sugar.

*N. conflua*. 6th July. Not rare at sugar.

*N. Dahlii*. 27th July. Swarming at sugar, and presenting an extraordinary range of variation in colour, from bister-brown to dark maroon-purple; scarcely two are precisely alike in markings.

*N. bella (Rubi)*. 1st Aug. Common at sugar, varying much in colour.

*N. umbrosa*. 17th July. Rare at lime-blossoms, also at sugar.

*N. baja*. 22nd July. Common at sugar.

*N. neglecta*. 26th July. Not uncommon at sugared rags laid on heather.

*N. xanthographa*. 20th July. Swarming at sugar, and varying much in colour and markings.

*Trachea piniperda*. 28th March. Very common at willow-blooms, ranging from brick-red to light green and gray. Pupæ under moss and pine-needles.

*Tæniocampa gothica*. 26th March. Common at sallows, also at sugar occasionally.

*T. rubricosa*. 17th April. Not common, on sallows, Califor Hill.

*T. instabilis*. 27th March. Frequent at sallows.

*T. stabilis*. 28th March. Swarming at sallows, and often at sugar.

*Orthosia maculata*. 12th Sept. Not common at sugar.

*O. rufina*. 27th Aug. Very abundant at sugar.

*O. Litura*. 12th Aug. Swarming at sugar.

*Cerastis Vaccinii*. 13th Sept. Swarming at sugar. Very variable in markings and colour.

*C. spadicea*. 16th Sept. Plentiful at sugar.

*Scopelosoma Satellitia*. 7th Sept. Swarming at sugar.

*Xanthia cerago*. 6th July. Not common at sugar.

*X. ferruginea*. 28th Aug. Frequent at sugar.

*Euperia fulvago*. 8th Aug. Not rare at sugar.

*Cosmia trapezina*. 23rd July. Swarming at sugar.

*Dianthæcia capsincola*. 29th June. Not uncommon, hovering over *Lychnis vespertina*, in the capsules of which the larvæ were found in abundance.

*D. Cucubali*. 19th Aug. One bred from larvæ found on *Lychnis vespertina*.

*Polia chi*. 31st July. Very abundant at rest on pine trees, also at sugar.

*Epunda nigra*. 12th Aug. Very abundant at sugar.

*Miselia Oxyacanthæ*. 8th Sept. Frequent at sugar.

*Agriopsis aprilina*. 16th Sept. Frequent at sugar.

*Phlogophora meticulosa*. 23rd Sept. Frequent at sugar.

*Euplexia lucipara*. 1st July. Rare at sugar.

*Aplecta occulta*. 15th Aug. Rare at sugar.

*A. nebulosa*. 13th Aug. Rare. Saw one at sugar, but missed it.

*Hadena adusta*. 30th May. Rare at rest.

*H. protea*. 5th Aug. Swarming at rest on pine trees, also at sugar.

*H. oleracea*. 4th July. Rare at sugar.

*H. thalassina*. 22nd June. Not common at rest and sugar.

*Calocampa vetusta*. 22nd Aug. Common at sugar, but not nearly so frequent as the next. Last season *C. exoleta* was the least frequent of the two.

*Calocampa exoleta*. 3rd Sept. Swarming in vast numbers at sugar. One night I counted more than two hundred in one round of my trees. It also occurred frequently in the spring, at sugar and sallows.

*Xylina rhizolitha*. 28th Sept. Rare at sugar.

*Cucullia umbratica*. 1st July. Rare, hovering over *Lychnis*.

*Anarta Myrtili*. 8th June. Common, flying over heather.

*Brephos Parthenias*. 5th April. Very abundant in Altyre Forest, flying over birch trees.

*B. notha*. 16th April. Same locality as the above, but not so common.

*Abrostola urticæ*. 26th June. Rare on raspberries.

*Plusia chrysitis*. 16th July. Rare, flying over flowers.

*P. festucae*. 30th June. Rare, flying over *Lychnis vespertina*.

*P. Iota*. 25th June. Rare over flowers.

*P. pulchrina*. 24th June. Common, flying over *Lychnis vespertina*.

*P. Gamma*. 25th May. Very abundant over flowers; occasionally at sugar.

*Amphipyra Trapopogonis*. 18th July. Abundant at sugar and lime-blossom. I have frequently seen and killed field-mice at my sugared trees, four or five feet from the ground; squirrels also came to lick off the sugar, but only by day.

*Stilbia anomala*. 12th Aug. Not uncommon at sugar.

*Phytometra ænea*. 16th May. Not uncommon, flying over heather.

G. NORMAN.

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*The Life-history of Dysthymia luctuosa*. — The eggs are laid in May, or early in June, on the climbing stems and flower-buds of the common bind-weed, and the young larvæ emerge in about ten or twelve days: the head is then much larger in proportion to the body than in more advanced life, but not so large as is generally the case in infant larvæ: both the head and body are furnished with a considerable number of hairs, which are far more conspicuous at this early period than a week or ten days later: the body is of nearly equal substance throughout, and the sides are nearly parallel: they feed almost entirely by night, and principally on the unexpanded flower-buds of the bind-

weed, hiding themselves by day near the surface of the ground, and remaining motionless during daylight. The full-grown larva rests in a perfectly straight position, so far as the sinuosities of the plant will allow, on the slender stems of *Convolvulus arvensis* (the common field bind-weed), the legs holding the stem slightly, but the claspers more firmly attached, the anal pair of claspers stretched out behind: when annoyed it falls to the ground, rolled in a lax and imperfect ring, the head turned on one side: the head is exserted and porrected; it is of almost exactly the same width as the 2nd segment, and emits a considerable number of straight hairs: the body is elongate and rather slender; it is attenuated towards the anal extremity; on the 2nd segment is a glabrous shining plate of a semicircular figure, the convex side being posterior; the remaining segments are distinctly marked, and each is slightly swollen in the middle. The colour of the head is pale rather shining brown, with eight irregular longitudinal series of amorphous spots; the plate on the 2nd segment is dingy brown, intersected by three paler stripes; the dorsal area of the body is striped with brown of two shades, there being three pale and four darker stripes; the paler stripes are medio-dorsal and lateral, the darker stripes alternating with them, and each darker stripe having in each segment a paler wart-like spot, which emits a hair; the lower dark stripe on each side is compound or composed of several minor stripes; the ventral is decidedly paler than the dorsal area, and the division between the two is abrupt and clearly defined; there is a medio-ventral series of black spots, connected by a slender and indistinct stripe of the same colour; the black spots are most conspicuous on the 5th, 6th, 7th and 8th segments: the legs are rather long, pale semitransparent brown, with black rings; the claspers are nearly concolorous with the ventral area. I am indebted to Mr. D. T. Button for a most liberal supply of these larvæ, which were full-fed on the 14th of June, and then went down to undergo pupation on or under the surface of the earth. Since this description (intended for the July number of the 'Entomologist') was in type, Mr. Buckler has published a description of the larva in the 'Entomologist's Monthly Magazine,' compiled with his usual care and skill; but he introduces an observation that seems scarcely needed. "The

young larvæ," says Mr. Buckler, "at first appeared to be veritable loopers, twelve legs only being visible; but as they grew larger the other legs became apparent, though still in walking they did not use the first pair of ventral legs." Mr. Buckler must have so frequently observed these characters in the young larvæ of *Mania typica*, *Mamestra Brassicæ*, and a host of other infant larvæ of Noctuæ, that he will at once see, although strictly correct in the case of the present species, it is by no means distinctive or peculiar. I make this remark not by way of criticism, but rather for the sake of introducing a second and collateral observation. The larva of *Acontia* is characterized by having six claspers only, whilst the species now under consideration has ten; and two types of larvæ differing in so primary a character cannot with any propriety be called by the same generic name; I have therefore proposed another for the species familiarly known as *Luctuosa*. At the same time I must disclaim every idea of merit as a discoverer, for Guenée has not merely described this interesting larva with minuteness and exactness, but invites especial attention to the fact of its possessing the normal number of claspers. He says: — "I find in the larva of *Luctuosa* a very curious, and I may say unique, exception among the Noctuelites; *Acontia luctuosa* has a larva entirely different from that of all other *Acontia*, and provided with sixteen feet. \* \* \* Were I as exclusive as I have been supposed in making the characters of the perfect insect subordinate to those of the larva, I should not have hesitated to refer to the family Catephidæ a species so strikingly exceptional. \* \* \* I must, however, be allowed to remark that the exception which this species offers is so remarkable and so strongly pronounced, that I think we ought to wait for a more perfect acquaintance not only with this species, but more especially with the earlier states of others in both the neighbouring families, before we pronounce any decided opinion as to its natural situation." — *Edward Newman*.

*A Life-history of Phyllotoma microcephala*, Klug. — The earliest evidence of the presence of this larva occurs about the 20th of June: if we examine those leaves of *Alnus glutinosa* (the common alder) which are frequented by the perfect insects, a minute brown-coloured spot, immediately



followed by a pale green slightly dilated blotch, will be detected on one or other of the leaves; some of the leaves may possibly be observed to contain four or even five of the little mines, which are, I believe, more often found at the tip or sides of the leaf than in the other parts. On extracting the larva it is observed to be about a line and a half in length, and is possessed of six legs and sixteen claspers, fourteen of these being ventral and two anal; the 4th and the 12th or penultimate segments are apodal: the head is brown, with darker markings; the back of the 2nd segment has a large dark brown plate, and the dorsal surface of the 3rd segment is decorated with a narrow plate of a similar colour to that on the 2nd segment; these two plates are divided down their centres by a dorsal line: the body is white, with a faint tinge of green imparted to it by the greenish fluid contained within the dorsal vessel; the mouth is dark brown, the head pale brown, the colour of the 2nd segment being dark brown, and on either side of this segment is a little white tubercle; the 3rd segment has a circular black spot in its centre; the 4th segment also possesses a black central spot, as do likewise the 5th and 6th; the thoracic or true legs are black, the ventral claspers white, the anal ones being nearly surrounded by a black band: when the larva moults for the first time, the small black spot previously noticeable on the ventral surface of the 6th segment entirely disappears. Like others of this genus, the larva feeds whilst lying on its back: when irritated there is no emission of fluid from its spiracles: after each moult the markings gradually reappear, and settle down to their proper tone, the exuviae of the larva remaining within the mine: when this larva is about half or three-quarters grown, the under side of its 3rd and 4th thoracic segments has additional markings; the 3rd segment has one, and the 4th has two, small black spots on each side near the legs; and the bases of the inner margins of the six true legs are partly surrounded by a semicircular black-coloured mark or band: by the time the larva is full-fed it forms a large brown blotch in the leaf, both sides of the leaf near the mine becoming discoloured, the upper part by far the most so. The larva, having quite satisfied its hunger, throws off its integument for the fourth time, and appears in a new dress; its mouth is

now tipped with dark brown, its head and the whole of its body being of a beautiful pale green, and its dorsal vessel charged with a faint orange-coloured fluid; the ventral surface of the thoracic segments is spotless, and the band on the anal claspers has a faint brownish tinge: when the larva has arrived at this epoch of its existence it remains for a time in a quiescent state; eventually, however, it splits open its mine, and, falling to the ground, buries itself in the earth. We may, however, occasionally meet with an instance where the larva has entered upon its pupa state within the mine itself: it is very apt to pursue such a course when confined in a breeding-jar. In constructing its cocoon the larva first describes a circle with its body; it then appropriates a portion of the upper and under cuticle of the mined part of the leaf, the inner margin of the circular-shaped abode being fastened down with silk, and the larva afterwards spinning a thin layer of silk over the whole of the interior: so far as I have yet been able to learn, this mode of proceeding applies with equal force to all the various leaf-mining Tenthredinidæous larvæ that occasionally form their cocoons within the mined leaves. Its usual mode of passing the pupa state is to enter the ground; but on whatever course the larva may decide in this respect, its parasite waits patiently until the Tenthredo larva has formed its cocoon before it quits its body and spins its own cocoon inside that of its victim. Like the larvæ of *Phyllotoma melanopyga* and *P. Tormentillæ*, this species may be collected and the perfect insects bred from the date of their appearance till the end of October: at the end of September the imagos, as a rule, cease coming out for the season, the little Tenthredos appearing the following spring. The larvæ destined to produce imagos the following year, remain unchanged till the early part of the next season before entering the pupal state. The larvæ are common on the alders growing at Shirley, Surrey.—*Charles Healy*; 74, *Napier Street, Hoxton, N.*

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*Entomological Notes, Captures, &c.*

*Colias Hyale.* — During the end of July and commencement of August last, this species was the commonest butterfly

to be seen at Marsh Bay, Margate, where the specimens were flying in hundreds. It was a lovely sight to see these handsome creatures settled on the flowers, and swaying to and fro in the wind, the rich gold colour of the under side contrasting beautifully with the purple flowers of the lucerne. My specimens vary very much in size, the largest being two inches and three lines in expanse, and the smallest only one inch and five lines. A few specimens are richly shot with the colour of *C. Edusa*, and one, captured by my wife, is of the pale greenish hue peculiar to the female, but at the base and along the costa is bright yellow, forming a very peculiar-looking variety. The ordinary type of *Hyale* was abundant all over the Isle of Thanet. Wherever a little patch of lucerne was to be seen, *Hyale* was sure to be there, even close to the houses. Its head-quarters, however, were decidedly at Marsh Bay, which lies between Birchington and Margate, being about a mile and a half west of Margate. Three of our number were unfortunately invalids; consequently, only having one good hand, we were unsuccessful in capturing more than about eight hundred specimens! It would have been easy to take it by thousands. We did not discover this locality till it was a little too late; consequently many of our specimens are worn. — *H. Ramsay Cox; West Dulwich, S.E.*

*Unusual time for the appearance of Stauropus Fagi.*— At the first quarterly meeting of the West London Entomological Society, held on the 4th of November last, Mr. Dow exhibited a specimen of *Stauropus Fagi*, which he had from the chrysalis the week previous. Believing this to be a case of unusual occurrence, I thought it worthy of being recorded. — *E. W. Timms, Secretary of the West London Entomological Society; Harrow Road.*

*Heliothis peltiger at Plymouth.* — I took a fine specimen of *H. peltiger* on the 26th of September last; it was in the company of *P. Gamma*, feasting on the flowers of *Mentha sylvestris*. — *G. C. Bignell.*

*Pupa of Trachea piniperda.* — Touching the pupa of *Trachea piniperda*, described at p. 355 of 'British Moths,' I had always thought the larvæ made up in the crevices of the bark of pine trees, and examined hundreds of trees in vain. I then got a hint that the pupæ would be found under

the last year's layer of needles and moss, and then I had no difficulty, but found them in abundance. You have just to roll up the carpet-like layer, and the pupæ are easily found, generally at about a foot distant from the tree.—*G. Norman; Cluny Hill, Forres.*

*Erebus odora in Jamaica.*—A solitary specimen of this large and beautiful moth was taken here lately, by a negro, resting with outspread wings on the under side of the lower flooring of a house. It is the first of the species I have observed on the north side of the island, and is a remarkably fine one (a female), measuring  $7\frac{1}{4}$  inches from tip to tip of upper wing.—*Alwin S. Bell, 3rd West India Regiment; Falmouth, Jamaica, October 5, 1868.*

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### Obituary.

*Death of Mr. Shuckard.*—William Edward Shuckard, one of the most accomplished entomologists this country has produced, died at the Oval Road, Kennington, on the 10th of November, 1868, aged sixty-five years. His name will long be remembered in connexion with his admirable translation of Burmeister's 'Handbook of Entomology,' and his 'Essay on the Indigenous Fossorial Hymenoptera of Great Britain.' The latter, published in 1837, is without comparison the most perfect entomological monograph ever published in this country: the Latin diagnosis, or *nomen specificum*, of each species is a model of terseness and completeness. Many detached papers in Natural-History journals attest not only the extensive range of his attainments, but also the philosophical character of his mind. Mr. Smith, also universally known by his works on Hymenoptera, and one of Shuckard's earliest acquaintances, has most kindly furnished me with the following particulars of his early life. W. E. Shuckard was the eldest son of Mr. Shuckard of Brighton, who for many years was the landlord of the 'Old Ship,' at that time the principal hotel in Brighton. Shuckard's father was a German, and, having at one time realized a considerable fortune, he determined on giving his son the benefit of a most liberal education. Shuckard was accordingly sent to first-class schools, and became an excellent

scholar and a great reader, more particularly of old and rare books. Eventually the time came for him to choose a business or profession; the church and the bar were talked of, but his taste was for books, and nothing would suit him but the business of a bookseller. Accordingly he was placed in the house of Baldwin, Craddock & Joy, of Paternoster Row. "At this time," writes Mr. Smith, "I was articled to Shuckard's uncle, the celebrated landscape engraver, who lived in Soho Square, and young Shuckard was to lodge at his uncle's during his apprenticeship. So matters went on. Shuckard was a most laborious reader; we occupied the same room, and he used to read whilst I was in bed; sometimes, if he was engaged upon a novel of Scott's, fresh from the press, and in fact before it was issued to the public, I listened to his whispering readings, for he dared not read aloud, because his uncle's room was beneath our attic story: these readings kept me awake, but when he was deep in his more favourite works, books of antiquities, I must confess to their somniferous effects upon myself. One book was of a most composing character, and it was one in which Shuckard took great delight, Butler's 'Anatomy of Melancholy:' he dropped upon some expensive edition of this book, and was so delighted with his treasure that in reading some favourite passages he would forget himself, and frequently read so loud that his uncle was awake by his midnight readings, and pounced in upon him in the very act. Several times were these discoveries made, and so determined was his uncle to put a stop to these proceedings that a plan was adopted of sending the servant up for our candle, which was duly put out, and a little lamp was lighted and substituted for the lost candle as soon as we heard his uncle safe in his own room; the window was darkened by hanging one of the bed-curtains before it, and every chink of the door—top, bottom and sides—was darkened, not forgetting the keyhole. All, however, proved useless in the long run. The termination was my being awake one night, and seeing Shuckard grasped by his uncle, both in a boiling rage, and a dismissal next day threatened. Accordingly Shuckard left, and for some time lodged at Bateman's Buildings, Holborn, opposite Furnival's Inn, where his midnight readings caused him to become a late riser in the morning, and a very irregular attender to his

duties in Paternoster Row. Complaints followed, and three times was he dismissed, the last time for ever. Shuckard now went to reside at Brighton with his father, who resolved upon starting him there as a bookseller, but he was anxious that his son should acquire a knowledge of the German book trade; he therefore sent him to one of the first firms in Germany (I think in Frankfort). Here Shuckard remained some time, after which he was to begin life as a bookseller. This, however, was not exactly to Shuckard's taste: he thirsted for literary fame. His first essays were as a sort of sub-editor of a Brighton paper; but his efforts were very intermittent, and having much time on his hands he used to employ it in rambling over the downs, and on one occasion while there, his attention was by mere accident attracted by some insects scrambling up a sandy bank. One of these he caught; it was *Cicindela campestris*: he admired its beauty, went again and again to the downs, and there, on the sandy banks, saw bees burrowing. His hymenopterous studies dated from these solitary rambles on the Sussex downs. He soon afterwards procured a copy of Kirby's 'Monographia,' and from this time his whole energies were devoted to Hymenoptera, and in this branch of Entomology no one has laboured more successfully." Mr. Shuckard's books are as under:—

Translation of Burmeister's 'Manual of Entomology,' with additions and notes by the Author. London, 1836.

Essay on the Indigenous Fossorial Hymenoptera of Great Britain. Demy 8vo. 1837.

Elements of British Entomology. London, Baillière, 1839. Demy 8vo, with 50 wood-cuts.

Monograph of the Dorylidæ, published in the 'Annals and Magazine of Natural History,' 1840.

On the Aulacidæ, a Family of Hymenoptera Pupivora, published in the 'Entomologist,' Vol. i. p. 115. June, 1841.

Coleoptera delineated; by William Spry; the letter-press by W. E. Shuckard.

Essay on the Indigenous Bees of Great Britain. 1867.

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# THE ENTOMOLOGIST.

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[PRICE 6D.

*Contributions towards a Life-history of the Pear-fly (Ceratitis citriperda).* By EDWARD NEWMAN.

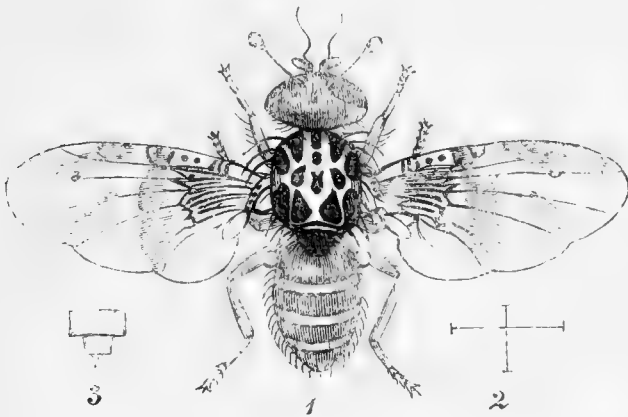


Fig. 1. The male Pear-fly magnified. Fig. 2. The natural size.  
Fig. 3. The ovipositor of female.

It will scarcely be reckoned an unwarrantable act if I assume that Mr. MacLeay's once celebrated notice of the orange-fly (*Ceratitis citriperda*), an insect very destructive to oranges, is altogether unknown to the majority of my readers. This once popular Essay was published in May, 1829, in the 'Zoological Journal,' then under the able editorship of Mr. Vigors. Having been made acquainted with the ravages committed by this insect during the hot summer and autumn of 1868 on our pears, it has become not merely a pleasure, but a duty, to reperuse and reconsider the labours of so accomplished an entomologist as Mr. MacLeay, at however remote a period they may have been written.

In the first place, it seems desirable to draw a clear line of demarcation between the two natural orders of fruits

which have been, or are about to be, brought under consideration; these are the Aurantiaceæ or citronworts, including the orange, lemon, citron or lime, and shaddock, all of them truly exotic as regards Britain; and the Pomaceæ or appleworts, including the apple, pear, quince, medlar, service, and mountain-ash, all of which in their natural condition, appear to be truly indigenous. Mr. MacLeay was evidently only acquainted with the ravages committed by the fly on fruit of the first of these orders; and even here he seems to have been sadly misinformed, for he attributes to this fly a much greater power of destruction than it really possesses. After stating the enormous loss incurred by the decay of oranges in transit from the Azores, &c., an estimate of loss in which the orange-merchants of to-day by no means concur, he goes on to say: — “Now, the decay of St. Michael oranges, which form the great bulk of those brought to the London market, is, towards the end of their season, namely, during the months of March, April and May, almost universally accompanied by the presence of the larva of a small fly, which I shall show by observations made by a friend in the Isle of France and by myself in London, to be the cause of the evil. \* \* \* As for the St. Michael oranges, towards the end of the season whole chests are destroyed by this fly, specimens of which are easily to be procured, as they may be bred from the larvæ which are to be found in almost every one of those damaged oranges which our barrow-women display for sale in the month of May.” This, however, is not shown; and although it is quite certain that the *Ceratitis* is often found in these decaying oranges, I am informed by my friend Mr. Hanson, than whom there is no higher authority, and whose scientific knowledge of the fly is probably unequalled, that the chief causes of decay are, first, gathering the fruit in wet and unsuitable weather; and, secondly, injudicious packing, and consequent heating on the voyage.

Now as to the *modus operandi* employed by the parent fly. Let us begin with the first statement of Latreille, who (*Règne Animal*, vol. v. p. 534) informs us that “les colons de l’île de France ne peuvent presque pas, d’après des observations que m’a communiquées M. Cattoire, obtenir des citrons sains et en parfaite maturité, a raison de l’extrême



multiplicité d'un diptère du même sous-genre (*Tephritis*) qui y dépose ses œufs." Mr. MacLeay wrote to M. Cattoire, formerly paymaster of the French forces in the Mauritius, and, through the kindness of that gentleman, received a female specimen of a dipteron almost identical with that under consideration, and with it the following important information, "Cet insecte dépose sa larve dans l'ovaire de la fleur d'oranges, et en détruit le fruit." Mr. MacLeay dissents from this statement, saying, "It is almost impossible to believe, on examining a decayed orange from St. Michael's, that the parent fly deposited its egg in the flower and not in the fruit, as the original puncture remains visible in the centre of the soft part of the rind, and is the invariable proof of a maggot being the cause of the decay of the orange." It is desirable to point out, although the distinction may be immaterial, that Latreille mentions only the lime, M. Cattoire only the orange. "I am induced," says Mr. MacLeay, in continuation, "to place confidence in M. Latreille's statement that the parent insect deposits its egg in the fruit, because in like manner this is obvious from the appearance of the infected St. Michael oranges, which always exhibit the puncture by which the fly inserted its destructive offspring. Whenever this puncture appears in an orange, we may be sure, I repeat, that there is a worm concealed in the interior." And again:—"I shall now describe more particularly the appearance of an infected orange, which may be at once known by a greater or less portion of its rind being withered, and showing evident symptoms of decay, in having lost its firm consistency and texture, and in having changed the usual brilliancy of its colour for an opaque and dull olive-yellow. The size of this withered and discoloured spot must of course, in a great measure, depend on the havoc committed in the orange by the concealed insect. While, however, the fly is in its larva state, this spot appears to vary from a space that might be covered by a sixpence, to one that might be covered with half-a-crown. In the centre we may perceive a small white orifice, which is the puncture of the parent insect, and which in general may be distinguished with ease from the orifice made by the larva, previous to metamorphosis, by a certain whiteness of the sides, which appears to result from mould, or vegetable of that nature."

My experience differs from this, inasmuch as I feel confident that the decay on the surface, the white orifice, and the mould so often observable around the orifice, are so many indications of the escape of the larva when full-fed, and that they have no connexion with its introduction, except inasmuch as the introduction, at some unascertained period, must have been antecedent to the exit. Nothing more than patience (and rather a large share of that virtue I admit) is required to observe how these little white apertures are made; the full-fed larva may, by perseverance, be detected in the very act, which is a sufficiently rapid one, occupying less than a minute; the head comes first as a matter of course, and performs a series of convolutions, at each of which a greater portion of the body is extruded, until it finally falls, finding any resting-place which chance may provide.

It is a matter of importance, as well as interest, to know that this insect, supposed for a period of at least half a century to feed exclusively on the orange, should in our day have migrated to the pear; and even now I seem scarcely able to assert that this is really a migration, one thing only being certain, namely, that it exerts its destructive powers on both these fruits.

My friend Mr. Sterry, of Peckham Rye, applied to me in October last under the following circumstances: having harvested his pears with his usual care (he being a most painstaking and therefore successful cultivator), found, among his crop of Marie Louise nouvelle, one after another getting prematurely soft and refusing to keep; and that each pear, as he broke it open, had not only become "sleepy" throughout, but contained a number of white maggots. A professional gardener would probably have been contented to conclude, "Ah! it's only the thrip," and would have syringed the heap of pears with a solution of Gishurst's compound, or dusted it with some flea- or beetle-destroyer. Not so my friend. His is one of those minds that desire to know the character of an enemy before attacking him. What wealth of grain and fruit might be annually saved were our cultivators generally of this mind! But it is not so: like the gamekeeper, the professional cultivator devotes friend and foe to indiscriminate slaughter.

No sooner had I examined one of my friend's sleepy pears, and turned out a few of the unwelcome and withal rather repulsive tenants, than I was convinced they were the larvæ of a dipteron. They were of an ivory whiteness and very shining, totally without legs, and gradually attenuated towards the head, which was furnished with two minute hooks or falcate mandibles, and had also something like a corneous plate on the last segment. As soon as exposed on a sheet of white paper, each larva formed itself into a ring, attaching its mandibles to the anal plate, and, after remaining in this state for two or three seconds, it suddenly relaxed its hold, and thus appeared to make an attempt to leap after the manner of the cheese-maggot. All its efforts in this direction were, however, abortive, being confined to a spasmodic jerk, which produced no further results.

My next object was to observe the natural escape of a full-fed maggot, an occurrence for which I long waited in vain, but was gratified at last, having one evening, on my return home from business, the good fortune to detect one in the very act of emergence. The operation was brief, and the escaped maggot, having fallen on some withered pear-leaves, soon concealed itself among them. On turning over these leaves a fortnight afterwards, I found no less than sixteen pale brown pupæ, each about the size and shape of a small grain of wheat; they appear as though turned in a lathe, and clearly exhibit eleven transverse lines, dividing the body into twelve compartments or segments, the last of which is evidently again divided, having a very small cup-shaped segment at the extremity: the 1st and 12th segments are decidedly smaller than the others; the 2nd and 11th are rather larger than these, and the remainder are of nearly equal size, and form a series of very evident rings, each of which becomes loosened and semi-detached when the imago is ready to escape.

Notwithstanding this general loosening of the segments from each other, the point of dehiscence is almost invariably between the 5th and 6th segments; the fly in its struggle to escape forces off the anterior segments, and these still remain attached together, forming a kind of cup: in some instances this cup becomes totally disconnected and falls off; in others it remains attached, and hangs as by a hinge,

but may be moved by a very slight touch. The flies under my care, almost immediately after emergence, which took place the last week in October, strutted about either among the dried leaves or on the sides of the tumbler which had served them for a residence during the pupal stage of their existence, waving their beautiful wings with all the apparent pride exhibited by a peacock spreading his train. It was, however, noticeable that the sexes took not the slightest notice of each other, nor of some pears with which they were constantly supplied as a nidus for their vainly prospected descendants.

The singular processes on the head, giving one the idea of a pair of supplementary and abruptly clavate antennæ, distinguish this from any British species of Macquart's sub-tribe Tephritides; so that in introducing it to the notice of British entomologists there seems no necessity for further details of structure; but two points still remain open to doubt, and, if entomologists please, to discussion.

*First.* What claim has this insect to a place in the British list? Has it migrated from the orange to the pear, or from the pear to the orange? Suppose it to be a principal cause of the sleepiness in our pears, it must have been a denizen here from time immemorial. It seems very certain, from the observations of Mr. MacLeay, that it infests the orange in other and far distant regions. He states that he observed the fly on a heap of oranges in the market-place at Funchal, in Maderia, and also at St. Jago, one of the Cape Verds. The inference from these facts, and from its never having been obtained in a wild state in Britain, would, I think, fairly induce the conclusion that the orange was the original pabulum of the larva.

*Secondly.* How has the larva found its way into the interior of the pear? Has the egg, in this instance, also been deposited in the blossom? and was its presence in the Peckham pears, during the unusually fine autumn of 1868, a normal or an exceptional occurrence? We have at present scarcely any materials towards the solution of these problems, but they are well worthy the investigating powers of a Vollenhoven, a Healy or a Millière.

EDWARD NEWMAN.

*Life-history of Bombyx castrensis.* — The mass of eggs laid by the female of *Bombyx castrensis* is one of the most beautiful and interesting objects in nature: it is about an inch in length, and of the thickness of a goose-quill; the eggs are imbedded in a most tenacious glue, which is not soluble in water, and form a compact cylinder, the axis of which, being the flowering-stem of some grass, is easily withdrawn when shrunk by desiccation; the eggs are deposited in very regular oblique series, and resemble a number of strings of minute beads wound spirally around the grass and then closely compressed together: each of these cylindrical masses contains about six hundred eggs, each individual is obscurely pear-shaped, the smaller end being inside and touching the grass-stem, but never adherent, for although the sides of the egg are so abundantly provided with glue, the two ends are entirely without it. The young larvæ emerge in May, and very speedily construct a web in which to reside: compared with that of *Bombyx neustria* this web is thinner and less opaque, and, owing to its being spun amongst the low plants on which the caterpillars feed, it is less noticeable: these webs are generally very near the ground, and are extremely abundant where they occur at all. After a time the larva forsakes its tent-like domicile, and entirely abandons its gregarious habits. When full-fed it rests on its food-plant in a nearly straight position, and is very easily shaken off, generally falling on its back, when it immediately turns over and begins to crawl; it never feigns death or rolls in a ring, but under all circumstances maintains a limpid and flaccid character; in this respect differing from such true Bombyces as *Familiaris*, *Quercus*, *Rubi* and *Trifolii*. The head is of almost exactly the same width as the 2nd segment; the body is of nearly uniform substance throughout, the back being rather convex, and having the divisions of the segments distinctly marked; the sides being dilated, and the dilated portions being broken up into wart-like lobes by transverse folding; the belly being rather flattened, the claspers rather long, but remarkably small at the extremities; the head and body are clothed with silky hairs of various lengths, but nowhere sufficiently abundant completely to conceal the skin: the colour of the head is bluish gray, minutely dotted with black; that of the body is rich

purplish velvety brown, with an interrupted and irregular medio-dorsal series of small and amorphous blue-gray spots, and two lateral stripes on each side of the same colour, the upper of these being the more perfect, and the lower containing the black spiracles; the space between these two stripes contains a series of linear orange spots, one in each segment; the ventral area is black, freckled with white: all the hairs are bright ferruginous. It feeds on *Artemisia maritima* (sea-wormwood), *Statice Limonium* (sea-lavender), greatly preferring the flowering-stalks and flowers, and in confinement it will eat the garden chrysanthemums: it is full-fed about Midsummer-day, when it spins a rather large and rather tough oblong cocoon of fine pale-coloured silk, interspersed with a powder much resembling flower-of-sulphur, the nature and uses of which are unknown; it appears to give no strength or support to the fabric: in this cocoon it changes to a black dull-looking pupa, the cuticle of which is transversely striated, and thinly clothed with short ferruginous hairs; these are most abundant at the anal extremity, which is prolonged and produced, but blunt. I am indebted to Mr. Button for a most liberal supply of these larvæ. The moths appeared throughout July.—*E. Newman.*

*Description of the Larva of Acidalia emutaria.*—The full-grown caterpillar rests in a nearly straight position, with its claspers firmly attached and its head prorected on a plane with its body; the legs are also prorected, closely appressed, and crowded together: when annoyed it tucks in its head very tightly, and, if the annoyance be continued, it eventually falls to the ground in a tolerably compact ring, but with the head on one side, feigning death: the head is about equal in width with the 2nd segment, and the body thence gradually increases in width to the anal extremity: it is slightly compressed, the sides being slightly dilated; it is regularly and very delicately wrinkled transversely, and every part of the body emits scattered bristles; the head and body are putty-coloured, the head having four longitudinal stripes of a very pale brown, but still a shade darker than the ground colour: the body has a double medio-dorsal stripe, rather inconspicuous and of a sienna-brown colour, throughout the greater part of its course, but more conspicuous at the incisions of the segments, where it forms two small brick-shaped spots;

on each side is another double stripe of a paler colour and somewhat waved; the spiracles are black, and in their immediate neighbourhood is a second double lateral stripe, less strongly pronounced than those already noticed; so that there are five double stripes on the dorsal and lateral surface; the ventral is concolorous with the dorsal area, and there is a narrow medio-ventral stripe almost white: the food-plant is unknown, but, like the larvæ of so many of our geometers, it has fed up on *Polygonum aviculare* (the common knot-grass), which seems to suit it admirably: my specimens, for which I am indebted to Mr. Button, spun slight webs among the stems of their food-plant on the 18th of July, and in these changed to pupæ.—*Edward Newman.*

*Life-history of Leucania impura.*—The eggs are laid during the month of July, and probably throughout the month, on the leaves and stem of *Dactylis glomerata* (the cock's-foot grass); and the larva, when very young and very small, forms for itself a most convenient domicile, by rolling up lengthwise one of the leaves in the form of a tube, the edges of the leaf being made to overlap, and being fastened into the tube-form with great neatness and exactness. When the occupant has outgrown his tenement, he treats it exactly as he would his own skin, wriggles out, abandons it, and weaves another better adapted to his increased dimensions. The young larvæ reside entirely in these tubes during the hours of daylight, only venturing out and feeding on the grass during the night. On the approach of morning they return to their houses, and do not appear very particular as to the laws of *meum* and *tuum*, if we may judge from the fact that one, two or three larvæ may occasionally be found in one tube, although it seems reasonable to suppose that each tube was originally constructed by a single larva, and was designed exclusively for his individual convenience, protection and privacy. An exception sometimes occurs to the otherwise uniform practice of using the tube only as a residence, and this exception is no less than eating his own house; perhaps he sometimes finds the night too bright, too moonlit, for a nocturnal foraging excursion; certain it is that occasionally—the exceptions are few and far between—he concludes, after mature deliberation, to devour his own mansion, leaving himself roofless, and by this act of voracity

entails on himself the necessity of constructing another. These tubes are only to be found in autumn, and are deserted as soon as the time for hibernation arrives, when the larva finds a somewhat more substantial retreat in the stem of the cock's-foot or other grass, or sometimes in the dried or dying stem of a stinging-nettle. At this period the body of the larva is uniformly cylindrical, slightly hairy, and of a bright straw-colour, with two brown dorsal stripes. It leaves its hybernaculum in March, feeds during the whole of April, and is full-fed in May. A small snail (*Succinea putris*) is very plentiful wherever the *Leucania* larva frequents, and has a strange propensity for concealing itself in the tubes constructed by the larva, thus establishing a kind of joint tenant-right or tenancy in common, which seems submitted to as a matter of course, and apparently without any other object than obtaining the shelter which these tubes afford. The larva, when arrived at its full size, no longer avails itself of its tubular shelter, but feeds exposed on the blades of the grass, although still principally by night, resting by day in a straight position on the flowering stalks: the head is small, decidedly narrower than the 2nd segment, and porrected; the body is cylindrical, but tapers slightly to both extremities: the colour of the head is pale testaceous-brown, delicately reticulated with darker brown, and having six darker lines: the body is ochreous-gray, the autumnal tint of straw-colour having disappeared; there is a brown medio-dorsal stripe, intersected throughout by a thread-like white line, and having two black dots on each side of each segment, that is four on each segment, and each dot emits a small hair or bristle: on each side of the body are two compound stripes paler than the ground-colour, one above and the other below the spiracles; both these stripes are pale yellowish gray and are rather broad, and both are intersected throughout by a median red portion which seems to have no clearly-defined boundaries; the ventral is paler than the dorsal area, and slightly tinged with green; the spiracles are oval, reddish, and edged with black; the legs are reddish; the claspers are concolorous with the ventral area, but each has two black spots and a little cloud on the outside. When exposed on the grass-stalks by day, this larva is subject to the attacks of a small ichneumon, which



lays about twenty eggs on each larva that it selects: on their emergence from the egg-shell the young larvæ of the ichneumon penetrate the skin of the *Leucania* larva, and appear to feed in company in its interior, coming out only to spin their cocoons after arriving at their full stature: these cocoons are delicately formed of the purest white silk, and the whole twenty, more or less as the case may be, are heaped one upon another, in a most disorderly pile, which has nevertheless a very pleasing appearance: when the ichneumon is ready to assume the winged state it sheds its skin or pupa-case, and, having pushed this to the bottom of the cocoon by means of its rather powerful legs, it goes to work with its scissor-like mandibles, and, cutting off a cup-shaped segment at the upper end of the cocoon, escapes through the aperture thus made, the little exquisitely white and beautifully regular cup remaining suspended among the floss silk in which the cocoons are imbedded: the name of the little ichneumon is *Microgaster glomeratus*; it is specifically the same as that so well known for its invaluable mission to check the increase of the large cabbage butterfly (*Pieris Brassicæ*). Those larvæ of the *Leucania* that are so fortunate as to escape the attention of this parasite, descend to the ground and spin a very loose and shapeless cocoon on the surface of the earth, when in confinement decorating the exterior of the structure with large grains of sand, pellets of frass, or other convenient material it meets with on the floor of the breeding-cage: in this retreat it changes to a smooth brown pupa, of a dull deep red-brown colour, which has a number of abruptly recurved hooks at the anal extremity, two of which, centrally situated, are longer and much larger than the rest; these are rather more distant at the base than at the extremity, but are nearly parallel, and very near together. Entomologists who possess my 'Illustrated Natural History of British Moths' will find there a very accurate description of the larva, but as that was translated from Boisduval, and not original on my part, I have much pleasure in being able to supply one from nature, having the materials both for the description and life-history kindly placed in my hands by Mr. C. J. Watkins, the discoverer of the singular and interesting economy of the species, which he previously published at p. 361 of the third volume of the

‘Entomologist:’ the possession of a liberal supply of the larvæ has enabled me to verify Boisduval’s admirable description.—*Edward Newman.*

*Description of the Larva of Pempelia formosella.*— It usually spins a very slight web for a dwelling-place among the leaves of the elm, on which it feeds, but this is little more than a few threads, and even these are sometimes absent: it moves forward by a continuous series of jerks, entirely different from the geometric progress of the loopers or the business-like crawl of the Noctuas: when annoyed it falls from its food-plant, hanging by a thread; the head is porrected on the same plane as the back; the face is very flat; the body is scarcely cylindrical, being somewhat flattened on the ventral surface: the colour of the head and body is olive-green, with eight very slender, whitish and rather indistinct stripes extending its entire length, and there is a circular white spot on each side of the 3rd segment. It was full-fed and turned to a pupa at the end of July. I am indebted to Mr. Goosey, of Stepney, for a supply of this larva.—*Id.*

*Observations respecting the Economy and Pupation of Tinea biselliella, Hemm.*— This little domestic pest I find, according to my experience, does not, when very young, spin any covering or “run” in which to secrete itself, but feeds openly: it is much alarmed when brought in close contact with a lighted lamp, &c., and scampers off as fast as it can travel from the immediate neighbourhood of the object of its terror. The larvæ appear to be more numerous in the month of May than at any other period of the year. The young larva is of a whitish colour, mouth dark brown, head light brown, dorsal vessel somewhat darkish; after the lapse of a few days the head assumes a darker brownish tint, and the hind lobes of the same have a faint indistinct darkish look; the dorsal vessel is darkish, but not of an uniform colour, having a clouded appearance in several places; the hind lobes of the head become deepened in tone; the dark-coloured dorsal fluid becomes disconnected, and finally settles in the vicinity of the last segments, where its presence is made known by a dark blotch appearing in that region. Generally about this period of its life the larva moults for the first time: its method of moulting consists, first of all, in

shedding the old skin of its body, which slowly retires to the anal extremity, and is finally thrown off; the next aim of the larva is to divest itself of the old covering of its head, and in pursuance of such a desire it wriggles its head from side to side until it has effectually removed the incumbrance: in a few instances I have observed a larva which, from some cause, was unable to throw off the old covering of its head, and when such an occurrence took place I found that it was a matter of certain death to the larva so unfortunately situated. Immediately after the moult has taken place, the body is white, the head glassy or milk-white, the mouth pale brown tipped with dull red, the dorsal vessel being exceedingly indistinct; for some four or five days afterwards the head becomes light brown, and the dark markings on its hind lobes reappear; the mouth is dark brown; the body white, suffused with a slight yellowish tinge; the dorsal vessel is then represented by two or three little dusky-coloured spots: having arrived at this period of their lives, the larvæ, when they come in contact, bite one another fiercely; so that each larva now, for its own safety and protection, constructs for itself a tubular-shaped cocoon or run; this is made of portions of its food: inside of this abode it feeds in security: this tubular abode has an opening at each end, so that in case of need the occupant is enabled to quit its domicile instantly on the approach of danger. I have only observed two moultings, but consider there must be a third, which has in all probability escaped my notice. Whilst studying the habits and economy of this little creature, I was exceedingly interested in watching the frequent and strange manner in which the dorsal fluid changed its colour and position; sometimes it was observed as a continuous, unbroken, thin or thick dark line; at another time it was represented as a chain of little dark dots running down the whole length of the back; then, again, it would change its colour to a dull blood-red on the back of two or three of the segments, the remaining segments betraying no outward signs of its presence; sometimes instead of a blood-red it assumed either a dark brown or a dull greenish tint, while at other times it betrayed its existence in the form of dark sombre patches. The larvæ appear to be so fond of living near each other in communities, that some of those which I

kept isolated from their companions languished and died, not from any want of food, but, as it appeared to me, from the simple fact of their not having been permitted to carry out their gregarious instincts. When the larva is full-fed all outward trace of its dorsal vessel disappears; it then enters the pupal state inside its cocoon or run: the pupa is at first quite white and very tender, requiring to be touched with the greatest care in order to avoid injuring it; its head a short time afterwards turns pale brown, and a pale brown tinge slowly spreads itself over the eyes; after this has taken place the segmental divisions on the dorsal surface of the abdomen turns pale brown; the eyes then assume a darker tint, and the anal segment becomes pale brown, the eyes in the interval turning quite black: on arriving at this period of its pupation the wings, as seen through the puparium, have a somewhat silvery look, and shortly afterwards turn pale brown, as likewise do the head and thorax, deepening into a darker brownish tone; the antennæ and legs become darkish; and the little animal thus slowly settles down to its natural colour and markings: like the imago, the pupa, excepting at its very earliest stages, is very lively, and on the slightest alarm wriggles its abdominal segments about furiously: all being in readiness the little imago bursts forth, leaving its puparium projecting from its cocoon or run. The imago lives for a period of about nine days. — *Charles Healy; 74, Napier Street, Hoxton, N.*

*The Pupation of Yponomeuta Padella, Linn.* — When it has completed its cocoon the larva gradually passes into a semi-torpid state, and eventually enters the pupal form, the larval skin being collected in a heap at the posterior extremity of the pupa: the pupa itself is about nine lines in length; its head and wing-cases are at first pale orange-yellow; each eye has two little spots on it, one pale brown and the other dusky coloured, the colour of the thorax and abdominal segments (the last four excepted) varying from whitish to yellowish green; the four posterior segments are yellow; the anal segment is furnished at its extremity with a cluster of brown bristles, which enable it firmly to adhere to the silk in its pupal abode; the four posterior abdominal segments turn darkish, especially the anal one; the antennæ, legs and feet then give faint signs of turning to

a dark tint, the tips of the antennæ and feet becoming dull black, the last four abdominal segments becoming shining black, and the spiracles then become black: when this stage of the coloration is reached, the head, thorax, wing-cases and the dorsal surface of the first abdominal segment turn darkish, and, running down the centre of the dorsal surface of the abdomen, a series of dusky markings are noticeable; half an hour or so afterwards the colour of the head, thorax, wing-cases and the back of the first abdominal segment settle down to a dull black tone; after the last-mentioned change the abdominal segments (excepting the first and four last) turn to a dull yellow tint; as soon as this part of its economy is accomplished the markings of the puparium have arrived at their full development, and prevent our catching the slightest glance of the gradual formation of the future decorations of the imago. The imago, when fully developed, pushes its way through the end of its cocoon, bursts open its puparium, and so escapes, the empty puparium retaining its decorative markings, but they are not so clearly defined as when it was occupied by the pupa in its earlier stages. I find that many of these insects die about the ninth day after their emergence from the puparium, whilst others will live for a period of nineteen or twenty days.—*Charles Healy.*

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*Entomological Notes, Captures, &c.*

*Notes on the Lepidoptera of Orkney.*—I send below a list of the species that I have caught or reared.

*Pieris Brassicæ.* I have seen this species flying about the moors, a mile or two from any cultivated ground.

*Chortobius Davus.* Very common where it occurs. This year it flew from June 30 to July 27.

*Pyrameis Atalanta.* Rare generally, but this year the larvæ were to be found on almost every bunch of nettles.

*P. Cardui.* Very uncertain. Fond of hill-sides. Middle of June to end of August.

*Lycæna Alexis.* Not very common. June to end of Sept.

*Macroglossa Stellatarum.* Saw one in August, at flowers.

*Hepialus Humuli.* Very common from middle of June to middle of July. The larva seems to feed two or three years,

as I have had one for two years, though an inch long when I got it.

*H. velleda*. One on the 9th of July, flying at mid-day over heather.

*Chelonia caja*. Larvæ very numerous in one place, among heather. Rather local.

*C. Plantaginis*. Four or five, end of June to middle of July. Found one larva in June.

*Arctia fuliginosa*. Found one cocoon among heather, in May.

*Saturnia Carpini*. One in beginning of May. Some larvæ in July, on heather and *S. ulmaria*.

*Fidonia atomaria*. Very numerous during May and June.

*Scodiona belgiaria*. One in July, female, but exactly like a male.

*Cheimatobia brumata*. Larvæ by thousands on shoots of heather, in June, and on willows. Few became pupæ before July.

*Larentia didymata*. Not numerous. August.

*L. cæsiata*. Several larvæ on heather, in June. Moths emerged in July. Very numerous on rocks towards end of July.

*L. pectinitaria*. A few in June.

*Eupithecia nanata*. A few in May and June.

*E. minutata*. Very numerous in May and June. In July I found numbers of the larvæ, feeding on the flowers of ragwort, on the moors: became pupæ early in August.

*Ypsipetes elutata*. Larvæ very numerous on heather, in June: they fed almost exposed, and in the beginning of July went into earth. The moths emerged in August.

*Melanippe montanata*. Rather common in June, among heather.

*M. fluctuata*. Common. Several larvæ on cabbage, in August.

*Cidaria munitata*. Common towards the middle and end of July.

*C. propugnata*. One or two, end of July and beginning of August.

*C. immanata*. Numerous among heather and ferns, in August. No wild strawberries near.

*C. ribesiarum*. Three or four, in July.

*C. populata*. Larvæ pretty common on heather, in June. I got a good series of moths, very variable. Moths out in beginning of August.

*Anaitis plagiata*. Rather common in June. I beat a larva off heather, in June. There was no *Hypericum* near, and it fed freely on heather in my breeding-cage. It had no trace of a yellow stripe on the sides.

*Xylophasia rurea*. Very common at flowers, from middle of May to end of July.

*Chareas Graminis*. Two in July, at rest on flowers of ragwort.

*Mamestra Brassicæ*. Several at sugar, &c., July and Aug.

*Apamea unanimitis*. A few at sugar, &c., July and August.

*Caradrina cubicularis*. At flowers, June and July.

*Agrotis porphyrea*. On moors, at rest on flowers, June and July. Rather common.

*A. agathina*. Flying among heather, August.

*Noctua C-nigrum*. Two or three at sugar, &c.

*N. festiva*. One at flowers, June.

*Tæniocampa gothica*. Larvæ very common in July, on dock, nettles, &c.

*Phlogophora meticulosa*. Two at flowers, August.

*Hadena adusta*. Very common at sugar, &c., June and July.

*Abrostola triplasia*. Larvæ on nettles, September.

*A. Urticæ*. Larvæ on nettles, September.

*Plusia Gamma*. Swarming all the summer.

*P. pulchrina*. One at flowers of *Lychnis dioica*.

*P. Iota*. Two on strawberry-leaves, in July. I also found a number of larvæ I could not identify, and also some *Noctuæ* I could not ascertain the names of.

*Acherontia Atropos* is occasionally caught, and two specimens of *Sphinx Convolvuli* were caught this summer at Kirkwall.

I have no doubt the list of Orcadian Lepidoptera might be very greatly increased if there were more observers, as I have this summer found several species that I never saw in Orkney before. I did not see a single larva of *Bombyx Quercus var. Callunæ* this summer, while in the summer of 1866 they were so common that one could hardly walk a step without seeing them on some of the moors.

As I see the account of the larva of *Cidaria populata* is very short in 'British Moths,' I send you some notes, made by myself, on larvæ of it beaten off heather. The smallest larvæ were about three-eighths of an inch in length, and in colour were yellowish white, with narrow white longitudinal lines on the back and sides: when full-grown they were about an inch long, and rather variable. One variety was all purplish brown, with no perceptible dorsal line, but white subdorsal lines; on the back were six white A-shaped marks, the apex pointing to the head; the second segment had two broad white longitudinal lines on the back; there was a white stripe on the outside of each anal clasper. Another variety was uniform light putty-colour, with blackish dorsal line, in some narrow throughout, in others expanding on every alternate segment into a black dorsal patch; spiracles black; the head was small and flattened. When in confinement they fed freely on willow-leaves: at rest the body was always kept almost straight out, and if annoyed they fell off the branch quite rigid. From the 26th of June to the 10th of July they spun slight cocoons among their food, and in them changed into pupæ about one-third of an inch long, of a dusky red on the abdomen, and a black stripe down the middle of the back; the thorax and wing-cases were darker. The moths emerged from the end of July till the end of August. — *J. Traill; Aberdeen.*

*Captures at Steyning, Sussex.* — I can quite corroborate Mr. Dutton's statement (Entom. iv. 160) on the scarcity of *Colias Edusa* on the Sussex downs this year. It seems to me to be a very odd thing that this butterfly, usually so common in these parts, should be so scarce, especially when reports come in of its unusual abundance elsewhere. I particularly wanted some, and hunted hard for them; yet I only took one specimen, and I do not suppose I saw many more than half-a-dozen altogether. *Lycæna Corydon*, another common insect here, was not by any means numerous this season; whilst *L. Adonis* was tolerably plentiful in August: I see in your 'British Butterflies' you give May as the month for its appearance, so I presume this was a second brood, as the specimens I secured were in very fair condition and of bright colour. *Sphinx Convolvuli* has visited this locality, as I took three specimens at different times this



summer—one on August 27th (a beautiful insect), flying over scarlet geraniums; another on the 29th, on the same flowers (a tattered specimen); and a third on Sept. 27th, in a conservatory (a very good insect). At ivy, too, amongst numerous common insects, I was fortunate enough to secure one specimen of *Xanthia croceago* and three of *Phlogophora empyrea*. In conclusion, to stimulate pupa-digging, I may mention that since September I have dug up between three hundred and four hundred pupæ, amongst them several of *Sphinx Ligustri*, *Smerinthus Tiliæ*, *S. ocellatus*, *S. Populi*, and *Amphydasis betularia* or *A. prodromaria*; of which of these two species the pupæ are I am not sure, as the chrysalids are so much alike; I rather fancy of both, as some were found at elm and others at oak trees. — (Rev.) *H. J. White*; November 4, 1868.

*Captures at Derwent Water.*—I send you a list of insects I have caught this summer at Derwent Water, Cumberland, from June 25th to the end of August:—*Erebia Cassiope*, *Cœnonympha Davus* (common on one piece of peat moss), *Drepana falcataria*, *Thyatira Batis* (came freely to sugar), *Cyamatophora duplaris*, *C. diluta*, *Acronycta leporina*, *A. Ligustri*, *Mamestra furvâ*, *Celæna Haworthii* (took several at sugar), *Agrotis Tritici*, *A. agathina*, *Triphæna fimbria* (common at sugar), *Noctua glareosa*, *N. depuncta* (one at sugar), *Xanthia flavago*, *Cirrœdia xerampelina* (one at sugar, and a gentleman caught three or four by the shores of Derwent Water), *Tethea subtusa*, *Polia Chi*, *Epunda viminalis* (several at sugar), *E. nigra* (three at sugar), *Aplecta herbida*, *A. tinctoria*, *Hadena rectilinea* (one at sugar), *Plusia bractea* (one hovering over flowers), *P. Festucæ* (one on the wing, June 26th), *P. Iota*, *P. pulchrina*, *Ellopiæ fasciaria*, *Geometra papilionaria*, *Fidonia piniaria*. Is not June 26th very early for *Festucæ* to be on the wing? I caught it when taking *Davus*, on a small bit of swampy ground. A gentleman found a pupa, not far from the same place, which did not come out till the end of August, two months later.—*W. C. Marshall*; *Trinity College, Cambridge*, November 17, 1868.

*Entomological Notes from East Looe.*—I have had three specimens of the convolvulus moth this year, the first I have ever procured here: two were caught in the same dwelling-house; one was put alive into a small box, and the other

into an envelope, so you may fancy what excellent cabinet specimens they were when I got them: the third was in excellent condition. Privet moths have been very abundant; I have found the larvæ feeding on ash, lilac and privet this year. Not a single death's-head. Elephant larvæ tolerably abundant.—*Stephen Clogg; East Looe, Cornwall.*

*The Black Amphydasis betularia.*—Last winter I obtained two pupæ of this species, each of which produced the black variety, male and female. The previous season I found one pupa at the same tree, which also produced a black specimen.—*K. Kay.*

*The Reed Moth at Framlingham.*—While walking round the moat of the Castle at Framlingham with a friend, I observed the centre of the reeds dying off, and from mere curiosity I cut one off at the bottom, and, unfolding the leaves, to my great surprise I found the caterpillar of the reed moth (which I believe is rather rare). I at once made the fact known to Mr. R. W. Ranson: it was rather late in the season, and unfortunately he could not obtain many duplicates.—*Raymond Fuller King; Albert College, Framlingham, Suffolk.*

*Greene's 'Insect Hunter's Companion.'*—I learn from my friend the Rev. Joseph Greene that he has received many applications respecting this valuable little work. The subject of reprinting it is under consideration, and, if concluded on, every particular will be announced in the 'Entomologist.'—*Edward Newman.*

### *Proceedings of the Entomological Society of London.*

November 2, 1868. — H. W. Bates, Esq., President, in the chair.

The President exhibited specimens of *Vanessa Urticæ* and *Zygæna Filipendulæ* from the Isle of Man, remarkable for their small size. The following note by the captor, Mr. Edwin Birchall, was read: — "I captured about twenty specimens of *Vanessa Urticæ* in the Isle of Man in June last, all of the same diminutive size as the examples sent for exhibition. The outline of the wings is more angular than in English specimens, the black spots either larger in proportion, or, in the case of the two spots in the centre of the

fore wings, actually larger in the small insects from the Isle of Man than in the large English ones, the variation from the typical form being thus exactly the reverse of what occurs in the Corsican subspecies *Ichnusa*, in which these spots are altogether wanting. Whether some accidental causes has dwarfed the insects, or that we have here a distinct insular variety, and the opportunity, as it were, of watching the origination of a new species, future inquiry must decide. *Zygæna Filipendulæ* also occurs in a very dwarfed condition: this I have observed both in 1867 and 1868, and the specimens exhibited are certainly the ordinary condition of that insect in the island. I hope entomologists who may visit the Isle of Man will collect other common species found there, as well as the rare ones for which it has become celebrated, that a wider basis for generalization than at present exists may be obtained."

Mr. Smith inquired whether *Vanessa Urticæ* was always thus dwarfed in the Isle of Man, or whether the smallness was one of the effects of the peculiarly hot season of 1868? He believed that during the past season many Hymenoptera had been observed in a dwarfed condition.

Mr. J. Jenner Weir had noticed that the common white butterflies of the past season were unusually small.

Prof. Westwood remarked that the diminutive size might perhaps be due to the heat, and the consequent rapidity of development of the insects, which remained a shorter time, and therefore ate less, in the larva state.

Mr. R. L. Davis (who was present as a visitor) mentioned that he had a number of pupæ of *Smerinthus ocellatus* of very small size: the larvæ had scarcely attained more than half their usual growth when they were driven into the pupa state by the frost destroying their food. According to his experience, scarcity of food was generally the cause of smallness. During the season of 1868 he had preserved for the cabinet, larvæ of about sixty-five species of Lepidoptera, most of which (including some of the diminutive *Smerinthus ocellatus*) were exhibited.

Mr. S. Stevens exhibited a moth from the British collection of the late Mr. Desvignes, ticketed "*immorata*, *Hüb.*," which it was suggested was an extraordinary variety of *Strenia clathrata*.

The Secretary read a letter from Gunner John Wilson, of the Royal Artillery, Woolwich, stating that he had bred a gynandromorphous specimen of *Lasiocampa Quercus*: "it shows the chocolate-coloured wings and feathered antenna of the male on the left side; on the right the wings are buff, and the antenna is single as in the female, the abdomen thicker and not tufted as on the other."

Mr. Briggs (who was present as a visitor) exhibited a *Leucania*, supposed to be *Leucania V-alba*, captured at Folkstone on the 15th of August, at sugar; a second specimen, much worn, was taken in the second week of October, within five yards of the same place. The insect appeared to differ from any species hitherto recorded as British.

Mr. H. Pryer exhibited a specimen of *Scoparia Zelleri*, *Wocke*, captured in the railway station at Norwood Junction, on the 17th of August, 1867. This was the first occurrence of the species in Britain; but the capture of a second specimen is announced in the 'Entomologist's Monthly Magazine,' v. 131.

Mr. Pryer also exhibited a specimen of *Agrypnia picta*, *Kolenati*, an addition to the list of British Trichoptera. The insect, a male, was captured at a gas-lamp at Highgate, in June, 1868.

With reference to the plague of so-called "mosquitoes" at Plumstead and Woolwich, in the months of July and August, the Secretary mentioned that in the latter month he had had sent to him from Woolwich two insects, each of which was alleged to be the delinquent. The first was a golden-eye (*Chrysopa*)! the other was a veritable gnat, and was pronounced by Mr. F. Walker to be the *Culex nemorosus*, a species often troublesome in woods, though not usually found in houses. Mr. Smith added that specimens of the common house-gnat (*Culex ciliaris*) had been sent to the British Museum as "the mosquito." [I have a rather different experience, having received *Sirex gigas*, *Tipula oleacea*, and *Anthomyia carnaria*, as the *true* mosquito, and *Macroglossa Stellatarum* as the *true* humming bird: the gentleman who kindly transmits the two species last-named "has resided for years in Jamaica, has attentively studied Natural History, and cannot be mistaken."—*E. Newman.*]

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## *Descriptions of Hymenoptera from Japan.*

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IN a Journal of British Entomology the following descriptions would certainly appear to be quite out of place, but there is a remarkable affinity between many of the Japanese insects and those of Great Britain; so close indeed is the resemblance of some species that their distinctive differences are extremely difficult of detection. This remark applies to species of Lepidoptera, Coleoptera, and also to Hymenoptera.

I have pointed out the British species which the Japanese insects most closely resemble; some of these are difficult to separate from them.

*Colletes perforator*.—Female. Length  $5\frac{1}{4}$  lines. Black, punctured, the pubescence griseous. Head: the clypeus covered with coarse longitudinal confluent punctures; the face, above the clypeus, with a thin pale ochraceous pubescence; that on the cheeks is cinereous. The thorax is thinly covered above with pale ochraceous pubescence; that on the sides and beneath is griseous: the mesothorax is closely and strongly punctured above; the metathorax rugose; the legs with griseous pubescence, the claw-joint of the tarsi and the tegulæ rufo-testaceous; wings hyaline, the nervures obscure testaceous. Abdomen shining, closely and finely punctured; the apical margins of the segments with narrow fasciæ of white pubescence.

This species strongly resembles the *C. Daviesana* of Europe, but is a more robust insect.

*Andrena halictoides*.—Female. Length  $5\frac{1}{2}$  lines. Black, the abdomen shining. The head with vertex finely longitudinally

rugose; the clypeus produced, shining and truncate anteriorly, having only a few scattered punctures; the face, along the inner margin of the eyes, with a line of short fuscous pubescence; from the anterior ocellus a shining carina runs to the base of the clypeus. The thorax subopaque, with scattered fuscous pubescence, that on the sides and beneath griseous and very sparing; the floccus at the base of the posterior femora white; the posterior tibiæ have the scopa fuscous above and silvery white beneath; the wings subhyaline, the nervures fuscous. Abdomen oblong-ovate, widest towards the apex and much narrowed towards the base, glossy black and with very delicate punctures, the apical fimbria fusco-ferruginous.

The general aspect of this species is that of a species of *Halictus*; its produced nasus is a striking characteristic. The species is remarkable in being apparently an enlarged representative of the British *Andrena Coitana*.

*Nomada maculifrons*.—Female. Length 4 lines. Ferruginous, with three longitudinal black lines on the thorax; the abdomen spotted with yellow. Head: the antennæ fuscous above; a black macula extends from the insertion of the antennæ to the ocelli, which it encloses; a smooth yellow spot on each side of the clypeus of a somewhat triangular shape; the head otherwise, as well as the thorax, closely and strongly punctured. The mesothorax with three longitudinal lines; the metathorax and the base of the femora black; the metathorax ferruginous on each side; the scutellum ferruginous; the sides of the metathorax with a little cinereous pubescence; the wings subhyaline, their margins fuscous; the tegulæ ferruginous, the nervures fusco-ferruginous. Abdomen ferruginous, with the base and the apical margins of the three following segments black; the second segment has on each side a large subangular yellow spot, a minute one at the sides of the following segment, an interrupted transverse line at the base of the fourth, and a large quadrate yellow spot on the fifth; beneath ferruginous.

This species closely resembles the darker examples of the *Nomada ruficornis* of Europe, but the smooth yellow spot on each side of the face is never found in any of the European specimens.

*Bombus ignitus*.—Female. Length 9 lines. Clothed with black pubescence, the three apical segments of the abdomen with rufo-fulvous. The head subovate; the pubescence on the margin of the vertex, on the posterior margin of the scutellum, and on the apical margins of the two basal segments of the abdomen, is sooty black; the four apical joints of the tarsi rufo-testaceous; the wings subhyaline, with a broad fuscous border to their apical margins; the basal joint of the tarsi clothed with short ferruginous pubescence beneath.

There is a species from North China having the same-coloured pubescence as *B. ignitus*, but it is much larger and has dark fuscous wings; the *B. lapidarius* of Europe is its closest ally: from that species it differs in being altogether a narrower insect, in the sooty fringes of the abdomen, and in the much darker colour of its wings.

*Bombus tersatus*.—Female. Length 10 lines. Clothed with fulvous pubescence, that on the thorax with a rufo-fulvous brightness. The head subelongate, its pubescence fulvous, intermixed with black below the insertion of the antennæ; the clypeus naked and shining, its anterior margin fringed with bright fulvous hairs. The pubescence on the body beneath is pale fulvous; the four apical joints of the tarsi ferruginous; the claws of the apical joint black; the tibiæ sprinkled outside with black hairs, the posterior pair fringed with black and intermixed with a few fulvous hairs; the wings subhyaline, with their apical margins bordered with fuscous.

This species is very like the *B. Smithianus* from Shetland, but that species has black pubescence beneath.

*Bombus diversus*.—Female. Length 10 lines. Clothed above with fulvo-ochraceous, beneath with black pubescence. The head elongate; the face, below the insertion of the antennæ, with thin erect black pubescence; above the insertion it is intermixed with short obscure fulvous, as it is also on the cheeks; the thorax above and on the sides, as well as the three basal segments of the abdomen, clothed with fulvo-ochraceous pubescence. The body beneath, as well as the legs, have a black pubescence; the apical segments of the abdomen are also clothed above with black; the

first joint of the posterior tarsi with short ferruginous pubescence; the wings fulvo-hyaline, with their apical margins broadly bordered with fuscous; the nervures fusco-ferruginous.

This species most closely resembles the *B. opulentus* from N. China, which I described in 'The Journal of Entomology,' vol. i. p. 153; but it is a larger species, and the fulvous pubescence covers an additional segment of the abdomen: the wings of *B. opulentus* are entirely brown.

*Crabro vagatus*.—Female. Length 4 lines. Black, the abdomen with yellow maculæ. Head subquadrate, wider than the thorax, longitudinally rugose-striate, the striation curving on the vertex laterally and running down the cheeks; the clypeus covered with bright silvery pile; the scape with a yellow line outside; the ocelli in an angle on the vertex. Thorax closely and coarsely punctured; the metathorax transversely striated and with a central channel, the semi-circular space at its base not distinctly defined, but obliquely striated; the wings hyaline and iridescent, the nervures testaceous, the tegulæ black; the tibiæ outside, and the anterior femora beneath towards their apex, yellow; the spines at the apex of the tibiæ yellow. Abdomen subpetiolate; the second segment with an oblong-ovate macula on each side, the fourth and fifth with a widely-interrupted narrow fascia at their basal margins.

This is the only species I have seen of the genus *Crabro* from Japan: it very closely resembles the European species *C. vagus*, but the sculpture of the head is very different, as well as that of the metathorax.

FREDERICK SMITH.

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*A Life-history of Druida parviceps*, Newman.—The larva of this species is a birch-miner; there are also two other kinds of Tenthredinideous larvæ, whose economy I am acquainted with, that blotch the leaves of birch. It is solitary in its habits, the perfect insect laying only a single egg on the leaf, always, I believe, depositing it on one side or at tip of the leaf, never in the central parts. The newly-hatched



larva commences life by making a small blotch on the upper surface of the birch-leaf; the little spot-like mine is of a brown colour: it would appear as though the larva possessed the power of staining the leaf; certain it is that the region of its birth-place, for the radius of about a quarter of an inch or so, becomes dark brown, as though mimicking the mines of such Microlepidopterous larvæ as *Cemiostoma scitella* of Zeller and *Tischeria dodonæa* of Stainton. One first notices these brown spots on the birch-leaves at the latter part of the month of June, and on examining the larva at that period it is found to have a light brown mouth, and a whitish head with light brown markings; the outer margin of its head is also light brown; the body is white, the dorsal vessel dark green; it has twenty-two legs—six pectoral, fourteen ventral and two anal; its 5th and 13th segments are destitute of legs, and it feeds with its belly facing the upper part of its food; its four anterior segments are much larger at this period of its existence than the others. It is a cleanly little animal, and takes considerable pains to keep its mined abode untainted by frass. One is interested in observing that although the larva is slowly consuming the tissues of the leaf, yet at the same time little, if any, frass is perceived within the mine: on turning the mined leaf over, fully expecting to find a hole on its under side for the ejection of frass, no such hole meets the eye; but if the edge of the leaf in the neighbourhood of the blotch be then closely examined with a pocket-lens, one or two little openings are perceived, the little caterpillar having separated the two skins of the leaf for the express purpose of ejecting its frass and cast-off skins, thus pursuing a precisely similar course to that adopted by the sawfly-feeding larva of *Phyllotoma melano-pyga* of Klug. In good time the larva moults: it is then observed that there is not anything like so great a disproportion between the sizes of the four anterior segments and the others, so conspicuously noticeable before the ecdysis took place. When the decorative markings have fully developed themselves, the mouth is observed to be dark reddish brown; the head brown, darker at the sides; the back of the 2nd segment has a dark shining brown-coloured plate, with a divisional line running down its centre; the body is white, the dorsal vessel green. On laying the larva on its back, the

top of the ventral surface of the 2nd segment is found to be crossed by a narrow pitchy brown-coloured band, and immediately below this is a pale brown X-shaped plate, bounded on either side by a little white wart-like protuberance; the 3rd and 4th segments each possess a small central brown dot; the thoracic legs faintly tinged with pale brown, and encircled with rings of a darker tint; the ventral and anal legs are white; the latter are nearly surrounded by a pale brown band. As the larva increases in size and extends its mine, it makes other little openings along the edge of its mine, in order to eject its frass: the part of the leaf at which it commenced its early life always remains of a much darker colour than any other part of the mine, and is invariably used as a retiring or sleeping-chamber, where it may occasionally be seen lying in a state of repose, just after the same fashion as the larva of *Tischeria complanella* of Zeller is observed to do, only this larva does not carpet its retiring-chamber with silk like the *Microlepidopterous* larva of the latter species. When startled or irritated this caterpillar lashes itself about from side to side, assuming for a time a curved posture: as soon as the annoyance is discontinued, or shortly afterwards, it resumes its natural position. Some four moults take place before the larva is sufficiently matured to enter upon its pupal form; at the last of these the body and legs become white; the head is very pale brown, and the jaws darker: it is then about nine lines in length. No discharge of fluid from its lateral pores has been observed. By the 13th of July some of the more advanced larvæ begin the construction of their cocoons, from which they are particularly careful to exclude all foreign substances: I believe these are always constructed inside the mined leaf. The first imagos are developed at the end of August or the beginning of September. Early in this latter month, and also during October, the second brood of larvæ are noticeable mining the leaves of birches, producing a few perfect insects in the months of September and October, the remainder lying over till the next season before they pupize, and the little *Tenthredo*s coming out in the month of June. I have not yet bred any parasites from this species. The larvæ may be collected at Bishop's Wood, Hampstead, on the birches growing alongside the main path through the

wood. — *Charles Healy*; 74, *Napier Street, Hoxton, N., January, 1869.*

*A Life-history of Fenusa pumila.* — Early in June certain of the leaves of *Rubus fruticosus* (the common bramble) are observed, on close scrutiny, to have one or more little dark spots on their upper surface: an examination into the cause of such a discoloration results in our discovering a little Tenthredinideous larva feeding in the interior of the leaf, the spotted part of the leaf being full or nearly so of frass: the colour of the larva is white, with a dorsal vessel of a dull green colour; the mouth is dark brown; the head pale yellowish brown, darker at the sides, and with a dark clouded patch on its dorsal surface; the dorsal area of the 2nd segment is dark brown, and the back of each of the 3rd and 4th segments has a narrow, darkish-coloured, interrupted plate; the ventral surface of the 2nd segment is furnished with a brown plate; the plates on the 3rd and 4th segments are of a more irregular shape, and are likewise brown; the 5th segment has a circular plate, whilst the decoration of the 6th segment is confined to a little brown-coloured dot; the six thoracic or true legs are circled with brown rings, and the 5th, 12th and 13th segments are without legs; the twelve ventral legs are white, the two anal legs being nearly surrounded by a brown band; there are twenty legs in all. In due time the larva extends its mine, and in doing so forms a short, narrow, serpentine track, which it leaves nearly filled with frass; it then alters its tactics, and widens its mine into a small blotch: the first moult then takes place, the skin being thrown off entire: the head is glossy white, with a small black spot on each side; its body is white, and the whole of its markings have disappeared; the anterior portion of the dorsal vessel is somewhat orange-coloured, the remainder of the dorsal fluid being a mixture of orange and dark green, the latter colour predominating: the larva lies quiet in its mine until the markings of its body have re-established themselves, a similar state of things taking place at each of the moultings. We may often observe as many as four little blotches in one bramble-leaf, each blotch being tenanted by a *Fenusa* larva; and the larvæ, in the course of time, having consumed large quantities of the parenchyma of the leaf, are then observed to break into one another's

territories, and thus eventually unite their several mines into one large blotch, in which the whole of the little creatures live harmoniously together. On recovering from the effects of its moult the larva recommences feeding; and by and bye a second and third moulting take place: after the third moult the various markings on the head and body assume a much darker tint, the thoracic plates becoming black, and the ventral legs are observed to have the front or inner margin of their bases decorated by a semicircular black band. Arriving at its adult state, the larva throws off its tegument for the fourth time, when its mouth becomes reddish brown; its head pale brown, darker at the sides; and its body dirty white and without any markings, the latter being entirely cast off at the last moult: the full-fed larva is between nine and ten lines in length. After remaining in its mine for a time, the larva makes a fissure in the leaf, and, emerging thence, falls to the ground, and buries itself in the earth to undergo its metamorphosis, never remaining in the leaf to form its cocoon. The perfect insects seem to prefer laying their eggs on plants growing by road-sides and under hedges: I have no recollection of having met with the larva on the leaves of brambles growing in the interior of woods. By the 5th of July the larvæ are abundant and in all stages of growth, and some have already entered upon their pupal state, producing the perfect insects on or about the 26th of the month; they continue coming out during the month of August: at the commencement of that month the larvæ put in an appearance for the second time, gradually increasing in numbers; and these larvæ produce perfect insects all through the month of September: fresh larvæ are constantly being born up to near the end of October; these latter, when full-fed, enter the ground, and remain unchanged during the winter, and from these are developed the perfect insects which appear in the spring of the year (about the 2nd week in May). I have never yet bred any ichneumons from this larva. If this species be ever so infested, the parasites must enter the ground to undergo their pupation, as I have made many long and close searches of the blotched bramble-leaves, endeavouring in vain to discover the cocoon of a parasite.—  
*Charles Healy.*

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*Entomological Notes, Captures, &c.*

*Colias Edusa at Brighton.*— I see in this month's 'Entomologist' the Rev. H. J. White, under the head of "Captures at Steyning," states that he only took one *Colias Edusa* on the Sussex downs, and has not seen above half a dozen. I was staying at Brighton at the end of September and beginning of October, and used frequently to see *Edusa* flying in the fields by Hove and Cliftonville. — *J. Barnes Johnson; Saxlingham Lodge, Long Stratton, Norfolk, January 1.*

*Vanessa Antiopa at Godmanchester.*— I beg to report the capture, by Mr. Gerald Hunnyburn, of Godmanchester, of *V. Antiopa*. It was taken at rest, in September, on a pear tree, early one morning. I saw it shortly after. It was damaged. Margin very white. — *W. Jagger; St. Ives, Hunts, January 6, 1869.*

*Callimorpha Hera near Brighton.*— A lady living at Patcham, near Brighton, Miss Poore by name, who is an amateur entomologist, caught at a lantern, in the autumn, but was not aware until the other day of its rarity, an example of the above; she does not recollect the day. Thinking it was only a variety of the cream-spot tiger, she offered it to a little boy who is collecting, by whom it was declined, because the edge of the wings looked burnt. A few days since she brought it to Brighton, to ask Mr. Swaysland what it was, and, as may be supposed, is delighted with her prize. — *T. W. Wonfor, Hon. Sec. Brighton & Sussex Nat. Hist. Society.*

*The Reed-moth: Correction of an Error.*— Would you kindly allow me to correct a few mistakes of Mr. Raymond Fuller King's? Supposing by the reed-moth he means *M. Arundinis*, I beg to state it was not *M. Arundinis*, but *N. Typhæ*, that he discovered in the Castle moat at Framlingham. It was not to Mr. R. W. Ranson, but to myself, that he first showed the pupæ and larvæ. The pupæ and larvæ of *N. Typhæ* were extremely numerous, there being hardly a stem of the great reed-mace (*Typha latifolia*) which had not its one, two, or even three inhabitants. I tried to keep some of the larvæ, but they gnawed a hole in my box and got away. I obtained a good many pupæ, but did not

manage to breed more than half of them. — *E. F. Bisshopp* ; 137, *Norwich Road, Ipswich, January 4, 1869.*

*Dianthæchii Echii, a new British Lepidopteron of the Family Hadenidæ.* — I have the pleasure to announce the addition of a very handsome Noctua to the British Fauna, the name of which Mr. Doubleday has kindly given me, and has also shown me foreign specimens of the insect. It is the *Dianthæcia irregularis* of Hufnagle ('Berlin Magazine,' 1768), or *Echii* of Borkhausen (1792). I found it at rest about ten miles from Bury St. Edmund's, on its food-plant, the viper's bugloss, early in July this year (1868). Mr. Doubleday has also identified for me an *Ægeria*, which I took, about ten years ago, between Dover and Folkstone, hovering over a clump of dogwood, as *Allantiformis*, or rather *Andreniformis* female. It had been perfectly black from grease for about eight years, and I only lately obtained a clear view of its yellow tail by the application of benzine. Another moth, which I also submitted to Mr. Doubleday, is still a puzzle. Judging from the imago, he would consider it an aberrant variety of *Hadena Chenopodii*, with wings almost as long and sharp as those of a *Cucullia*, and very distinct markings; but then I dug it under an oak, in a very beautiful long and pointed pale yellow cocoon, very similar to that of *Zygæna Filipendulæ*, whereas *H. Chenopodii* does not make such a cocoon. The imago appeared in my breeding-cage in May. The plough is about to pass over a great part of the best hunting-ground for *A. sulphuralis* at Tuddenham. This will not, however, affect *A. rubricata*, which was taken in various rye-grass fields. I believe that the district between Higham Station, Brandon, Thetford and Icklingham, will, if properly worked, produce many rarities and perhaps novelties. — (*Rev.*) *A. H. Wratishaw* ; *School Hall, Bury St. Edmund's, December 30, 1868.*

*Tabanns sudeticus, a new British Dipteron of the Family Tabanidæ.* — This insect was separated from *T. bovinus* by Zeller in the 'Isis' for 1842, p. 815, and figured pl. i. figs. 5, 8; it is also described as a continental species by Mr. Walker in Part V. of the Museum 'Catalogue of Diptera,' p. 157; by Schiner in the 'Fauna Austriaca,' Part Diptera, vol. i. p. 34; and by other authors. I am indebted to Mr. Verrall for these references. This noble insect equals in

size the well-known *Tabanus bovinus*, but is distinguished at a glance by the testaceous colour of the abdomen. The Entomological Club cabinet possesses a fine series, mostly taken in the South-west of England. All the specimens are females.—*Edward Newman.*

*Hæmalopota longicornis*, a new British Dipteron of the Family *Tabanidæ*.—This species was separated by Macquart in his 'Natural History of Diptera,' vol. i. p. 211: it is noticed by Meigen as a variety of *H. pluvialis*, from which it differs in the antennæ being at least a third longer, and having the basal joint slender and cylindrical, while in *H. pluvialis* it is obtusely oval; the general distribution of colour in body and wings is nearly the same as in *H. pluvialis*, but the insect is altogether larger: there are two specimens in the Entomological Club cabinet—one from the neighbourhood of Balcombe, in Sussex; the other from the Kent coast.—*Id.*

*Anthrax bifasciata*, a new British Dipteron of the Family *Anthracidæ*.—This species is figured by Meigen, pl. 17, fig. 15, and appears identical with *A. maura* of Fabricius, Syst. Ant. No. 12. It much resembles *A. fenestratus*, but the dark portion of the wings is uninterrupted by hyaline spots. In the Entomological Club cabinet.—*Id.*

*Anthrax Pandora*, a new British Dipteron of the Family *Anthracidæ*.—This species is figured by Meigen, pl. 17, figs. 4 and 16. Like the preceding, it much resembles *Anthrax fenestratus*, and I have received both species under that name from the South-west of England: they have stood for some time in the Entomological Club cabinet as *Anthrax fenestratus*, but, feeling dissatisfied with the name, I took them to Mr. Walker, to whom I am indebted for the names now given.—*Id.*

*Anthrax semiatra*, a new British Dipteron of the Family *Anthracidæ*.—Meigen, pl. 17, fig. 14. A very distinct and conspicuous species. A pair of this beautiful insect, pierced with English pins, have been most kindly presented by Mr. Walcott, but I am sorry to add I have no clew whatever to the locality. Full descriptions will appear in the 'Year-Book.'—*Id.*

*Camponiscus Healæi*, a new British Hymenopteron of the Family *Tenthredinidæ*.—During the past autumn Mr. Healy,

whose researches into the life-history of our leaf-mining Hymenoptera have added so largely to our knowledge of that hitherto little-known family of insects, kindly brought me a number of larvæ he had found feeding on the leaves of *Alnus glutinosus* (common alder): they were evidently those of a sawfly, the undivided epicranium and isolated ocelli removing all possibility of their being lepidopterous, but their form seemed equally to preclude the possibility of their belonging to either of those sections into which I divided the sawflies in 1832. The shape was perfectly onisciform, the head being usually concealed, but capable of extrusion at the will of the insect; the segments of the body being clearly defined, each segment very thin and almost membranous at the sides, and its extreme margin fringed with hairs: neither legs nor claspers were visible from above, but on turning the creature on its back the usual pair of scaly legs were visible on the 2nd, 3rd and 4th segments; the 5th segment was unprovided with either legs or claspers, and the following segments, the 6th to the 12th, both inclusive, each possessed a pair of semitransparent claspers, very short, and more resembling adhesive disks than the familiar claspers of sawfly larvæ: I could not detect any claspers on the small caudal segment. Mr. May, the able translator of Vollenhoven's admirable papers on sawflies, kindly undertook the transmission of some of these curious creatures to M. Vollenhoven, and through his medium I have learned that the larvæ were already known to De Geer (vol. ii. sect. 2, plate 38, figs. 11, 12 and 13), to Reaumur (vol. v., Memoir 3, pl. 12, figs. 17 and 18), and were also mentioned by Gustav Dahlbom in his 'Clavis Novi Hymenopterorum Systematis,' but that no one had any knowledge of the imago. Under these circumstances it was therefore with peculiar pleasure I found that Mr. Healy had been successful in breeding the perfect insect, and I have now larva, pupa and imago before me, and have great pleasure in naming the species after the indefatigable discoverer of its life-history. The antennæ are nine-jointed, clothed with a very short down, and taper gradually to the tip; the wing-cells are one marginal and four submarginal; three of these are equal in length; the fourth is square: the head and antennæ are black; the thorax is black, with a triangular yellow spot in front of the



base of the fore wing, and a diffuse testaceous spot on the sternum beneath the wing; the abdomen is black above and on the sides beneath, but testaceous in the middle beneath; the legs, including the coxæ and tarsi, are ochraceous. Mr. Healy possesses interesting particulars concerning the life-history of this insect, which I trust he will shortly make known to the readers of the 'Entomologist.'—*E. Newman.*

*Allanthus viduus*, a new British Hymenopteron of the Family Tenthredinidæ.—I had the good fortune to take a single specimen of this insect, many years ago, in Darenth Wood, in Kent, and it has remained unnamed until the present month, when Mr. Smith, of the British Museum, kindly supplied names for the present and the following species. There is no cognate species with which to compare *Allanthus viduus*: the fore wings are opaque smoky brown; the head, thorax and abdomen intensely black, with the exception of the 4th segment, which is white above: it is about the size of *A. zonatus*.—*Id.*

*Allantus Schæfferi*, a new British Hymenopteron of the Family Tenthredinidæ.—I took a single specimen of this insect, also many years since, in Herefordshire, and, like the previous one, it has remained unnamed. *A. Zona* and *A. Zonula* are cognate British species: it resembles both of these in size and the yellow base of the antennæ; the fore wings have a clouded costal margin, more especially towards the tip; the abdomen is black, with two yellow belts; the first is very narrow and near the base, the second broader and beyond the middle; the tip is also yellow: it agrees with *Zona* and *Zonula* in size.—*Id.*

*Platystoma Umbrarum*, a new British Dipteron of the Family Muscidæ.—A single specimen of this insect, which is the *Musca Umbrarum* of Fabricius' 'Species Insectorum,' ii. 450, 80, and the *Platystoma Umbrarum* of Meigen's 'Diptera,' v. 391, pl. 53, fig. 22, has been taken in Gloucestershire: it is a much larger and more showy insect than the common *P. Seminationis*, which in other respects it a good deal resembles. The specimen is now in the cabinet of the Entomological Club.—*Id.*

*Coccus Beckii*, a new British Hemipteron of the Family Coccidæ.—My readers will recollect a most able and valuable paper, published in the 'Zoologist' (second series), by the late

lamented Mr. Richard Beck, on the Coccus of the orange. Mr. Beck did not name the species, and I therefore propose to call it *Coccus Beckii*, after its distinguished historian. I have now the pleasure of recording a new feature in its history; it has either migrated to the apple, or is a parasite of the orange and apple in common. During the investigation which took place on the discovery of that beautiful little fly, *Ceratitis citriperda*, in the pear, my friend Mr. Sterry called my attention to this second infester of the orange having established itself on a different fruit. It appeared as a narrow scale about a tenth of an inch in length, slightly bent at one extremity, and always adhering so closely to the rind of the apple that it is scarcely possible to remove it entire. The females are larger than the males, and never by any chance leave the spot where they first fasten themselves: the male is winged, but has never yet been taken in that state.—  
*Edward Newman.*

*Sibinia Statices*, a new Coleopteron of the Family *Curculionidæ*.—In the summer of 1866 I captured a number of specimens of a *Sibinia* from the sea-thrift. These have been sent to several coleopterists, but up to the present time I have been unable to learn its name (if it has any), further than that it is a species new to Britain. Under these circumstances, and after waiting for about eighteen months, I shall not perhaps be considered impatient if I now introduce it under the manuscript name of *Sibinia Statices*. Habitat of larva and imago in the flower-heads of the sea-thrift, Island of Portsea. It is a pretty species, light brown in colour, with darker dorsal stripes, and when quite fresh is covered with dense scales, but these latter are soon rubbed off; then the insect has somewhat the colour and appearance of *Amalis Scortitium*. It is about the size of *Miccotrogus picirostris*, and very local. I have searched the island round, and as yet have only found it in one spot a few yards in diameter, where it is pretty abundant. Under the circumstances I do not think it advisable to be more explicit as to its locality, as dealers would soon exterminate the species.—  
*Henry Moncreaff; Southsea.*

*Orchestes Alni* in a Branch of *Whitethorn*.—In October last I broke off the portion of a decaying branch of whitethorn which was much perforated and eaten by some wood-

feeding insect, and, having taken it home, I proceeded to cut it into fragments, expecting to find a colony of *Anobium castaneum*; instead of that species, to my surprise, I disinterred about three dozen specimens of *Orchestes Alni*. They were closely surrounded by frass, and had evidently pupized, if not fed up, in the stump. Was it not a curious habitat for this insect, as the larvæ are stated to be leaf-feeders by most writers?—*Henry Moncreaff*.

*Vanessa Cardui at Christmas*.—This morning I captured a beautiful and perfect specimen of *Vanessa Cardui*. Is it not a rather unusual occurrence for the season of the year?—*Geo. Bell; Gun Wharf, Portsmouth, January 24, 1868*.

[I think not: hibernating butterflies come abroad whenever the thermometer approaches 60° Fahr., which it did just before Christmas-day.—*E. Newman*.]

*Pontia Rapæ in January*.—Mr. Wardle, gardener to Alfred Illingworth, Esq., M.P., has kindly sent me a specimen of *P. Rapæ* which he captured in the conservatory on the 17th of January, and informs me that another white butterfly was seen a few days previously. Artificial heat has, I presume, more to do with this premature birth than the mildness of the season, but I thought the occurrence interesting.—*Edwin Birchall; Newlay, Leeds, January 24*.

*New Fluid for Preserving Larvæ, &c.*—A cheap fluid for the satisfactory preservation of larvæ and other soft animal forms has long been a desideratum among naturalists. The following solutions, prepared by Prof. Verrill, and published by him in 'Silliman's Journal,' have been found satisfactory for the preservation of both the colour and form, as well as the structure of larvæ, fishes, mollusks, and leaves of plants:—Solution A 1 (which may be kept in wooden casks): Rock salt, 40 oz.; nitre (nitrate of potassa), 4 oz.; soft water, 1 gallon. This is the final solution in which all invertebrate animals must be preserved. A solution with double the amount of water may be kept, and called A 2; another, with three gallons of water, will be A 3. Solution B 1: Soft water, 1 gallon; solution A 1, 1 quart; arseniate of potassa, 1 oz. Another solution, with double the amount of water, may be made, and called solution B 2. To preserve insects with these solutions, they are placed first in solution B 1, but if the weather be cool it would be better to first employ B 2.

If the specimens rise to the surface they should be kept under by mechanical means. After remaining for several hours, or a day (varying according to the size and the weather), in the B 1 solution, they may be transferred to A 3, and then successively to A 2 and A 1; and when thus fully preserved they may be transferred to a fresh portion of the last solution, which has been filtered clean and bright, and put up in a cabinet, when no further change will be necessary, if the bottle or other vessel be properly secured to prevent the escape of the fluid by crystallization around the opening. To prevent this the stopper, whether of cork or glass, together with the neck of the bottle, may be covered with a solution of paraffine, or wax in turpentine, or benzole, which should be applied only when the surfaces are quite dry and clean. The length of time that any specimen should remain in each of the solutions is usually indicated by their sinking to the bottom when saturated with it. In many cases but two solutions below A 1 will be effectual.

*Captures of Lepidoptera.*—The following is a list of a few of the lepidopterous insects I have noticed, taken or bred during the past season.

*Cynthia Cardui.* Greetland Moors, in June.

*Macroglossa Stellatarum.* A specimen brought to me from Almondbury.

*Chelonia Plantaginis.* Of this species I reared a second brood in September.

*Arctia fuliginosa.* Greetland Moors.

*Liparis Salicis.* I noticed the young larvæ of this species in large numbers on willow, when at Southport, in May.

*Orgyia fascelina.* Larvæ in abundance on dwarf sallow on the sand-hills at Southport, beginning of May.

*Bombyx Quercus.* Larvæ feeding on dwarf sallow at Southport.

*B. Callunæ.* Larvæ abundant on the Greetland Moors.

*Epione advenaria.* Bred: larvæ received from Southsea.

*Eurymene dolobraria.* A greenish larva, obtained by beating in Sherwood Forest the previous autumn, produced this species.

*Crocallis clingularia.* Bred a fair number from larvæ which emerged from the eggs in spring, and had spent the winter in the egg state.

*Boarmia perfumaria*. Very abundant in gardens. I feel convinced that ivy is not the only food of this insect.

*Ephyra punctaria* and *E. pendularia*. Bred a beautiful series of each, from larvæ obtained by beating in Sherwood Forest the previous autumn.

*Scodiona belgiaria*. Common on the Greetland Moors. I obtained a good number of eggs.

*Hybernia aurantiaria*. Clare Hill.

*Eupithecia pulchellata*. Larvæ on foxglove at Woodsome.

*E. fraxinata*. Larvæ rather freely by beating ash at Grimescar.

*E. nanata*. Larvæ in abundance by sweeping the heather at Crosland Moor.

*E. subnotata* and *E. vulgata*. In the imago state, the latter very commonly.

*E. exignata*. This insect was produced from a larva obtained by beating in Sherwood Forest, the previous autumn.

*Melanthia ocellata*. At Linthwaite, not uncommon.

*Melanippe galiata*. Common at Grimescar.

*Coremia ferrugata*. At Southport, in May.

*Cidaria russata*. Bred.

*C. populata*. In a fir-wood at Norland this species occurred in profusion; it was also common at Linthwaite.

*Pelurga comitata*. Clare Hill.

*Acronycta Psi*. In September a specimen, which had only been a few weeks in the pupa, appeared in one of my breeding-boxes.

*A. Rumicis*. In the larva state. This insect was formerly very abundant, even on the road-sides; now it is comparatively seldom seen.

*Polia flavocincta*. The larvæ of this species were not uncommon on everlasting peas in a garden at Clare Hill.

*Aplecta nebulosa*. A larva beaten from birch in Sherwood Forest, the previous autumn, produced this insect.

*Anarta Myrtili*. Very common on the Greetland Moors, flying in the daytime. I swept the larvæ in numbers from heather in autumn.

*Mania maura*. Clare Hill. — *G. T. Porritt; Clare Hill, Huddersfield, December 3, 1868.*

*Proceedings of the Entomological Society of London.*

November 16, 1868.—H. W. Bates, Esq., President, in the chair.

Mr. Bond exhibited a specimen of *Tapinostola Elymi*, captured on the Norfolk coast, near Yarmouth; a variety of *Dianthœcia capsincola*, bred in 1867 by Mr. Noah Greening, at Warrington, having the wings on one side abnormally coloured; seven specimens of *Polia nigrocincta*, bred in 1868 by Mr. Greening, from larvæ found in the Isle of Man, and the earthen case in which one of the pupæ had been enclosed.

Prof. Westwood announced that the *Leucania* exhibited by Mr. Briggs at the previous Meeting had proved to be *L. albipuncta*, *W. V.*, a species new to the British list.

Mr. M'Lachlan read extracts from the 'Canadian Entomologist,' one recording the occurrence of *Papilio Machaon* in the Hudson's Bay Territory, the other relating to the naturalization in North America of *Pieris Rapæ*, which, recently introduced into Canada, had already spread southwards into Maine and Vermont.

Mr. Bond mentioned the occurrence of a swarm of beetles in Cambridgeshire. A correspondent, writing from Whittlesford on the 30th of September, 1868, said:—"Within the last few days, the road, the foot-path, the grass and the hedges from my house for about three-quarters of a mile, have been covered with them: there must be bushels of them, and although we have had showers, their numbers do not diminish." The species in question was *Gastrophysa Polygani*.

Mr. M'Lachlan exhibited larva-cases, and specimens of both sexes of the imago (winged males and wingless females) of *Encœyla pusilla*, bred by Mr. Fletcher, of Worcester, an interesting addition to the list of British Trichoptera. The larvæ were terrestrial in their habits, feeding in mosses growing on the bark of trees, and had not any external respiratory organs.

December 7, 1868.—H. W. Bates, Esq., President, in the chair.

The Secretary announced the death of Prof. Boheman, an Honorary Member of the Society : he died at Stockholm on the 2nd of November, at the age of seventy-two years.

The Secretary announced that an exhibition of bees would be held at Milan, from the 10th to the 13th of the month, and would comprise a collection of all kinds of bees, honey, and instruments and utensils employed in apiculture, for which various prizes would be distributed. A silver medal was also offered for the best mode of taking the honey without destroying the bees.

Mr. Bond exhibited two specimens of *Limenitis Sibylla*, negroes, entirely black on the upper side ; and three specimens of *Polyommatus Adonis*, one of which, a male, was remarkable for its extremely small size, another bore on the under side of the fore wings a number of broad bars of black, whilst the third, a female, was partly coloured like the male, the upper surface of the wings being dashed with bright blue, not shading off into brown, but clearly and sharply defined.

Mr. Dutton exhibited a *Catocala Fraxini*, captured in an empty house at Eastbourne in August last.

*January 4, 1869.* — H. W. Bates, Esq., President, in the chair.

Mr. Bond exhibited two diminutive specimens of *Vanessa Urticæ*, about half the usual size of the butterfly ; they were two out of fifty or more dwarfs, not all of the same brood of larvæ, which, owing probably to the extreme heat of 1868, had been developed with remarkable rapidity, having remained less than a week in the chrysalis state.

Mr. Bond also exhibited a dark variety of the female *Apatura Iris*, and a very pale variety of *Hesperia Comma*.

Mr. W. C. Boyd exhibited a specimen of *Crambus myellus*, captured by Mr. Adam Boyd some time since near Blair Athol, and which had remained mixed in Mr. Boyd's collection with *C. pinetellus*, until his attention was called to it by the announcement at the previous Meeting.

The Secretary exhibited photographs of nests of *Vespa Britannica* and *V. arborea*, presented to the Society by Mr. John Hogg, by whom the nests were found at Norton, Durham.

Mr. Smith exhibited a series of drawings of bees and

wasps and their respective nests, and a number of the actual nests, collected in India by Mr. Charles Horne.

Mr. Horne (who was present as a visitor) gave some interesting details on the habits of the insects. The species of bee which was kept by the natives was, he believed, the *Apis dorsata*. In the North-west Provinces it was necessary to leave the key in every lock, or the cavity was pretty sure to be occupied by a *Pelopæus*: if a sheet of paper was left on a mantel-shelf, it would be fixed thereto by an inserted mud-cell; or a like cell might often be found interposed between a pillow and the bed; even a little hollow in the floor, in spite of the inevitable destruction of the nest, would be filled; and in one case he had known a nest to be placed on the edge of a door, and it was seven times crushed by the shutting of the door, and seven times renewed before the little bee could be induced to forsake the spot she had chosen. Some of the nests exhibited were placed in very singular positions; one, of a leaf-cutting bee, was in the handle or ear of a terra cotta vase, access being obtained through a small hole in the narrow lower end of the handle; another, belonging to a *Pelopæus*, and consisting of a single mud-cell, was attached to a man's signet or finger-ring the stone of which had fallen out, and was fastened to the metal by means of a coil or knot of mud passed through the hole where the stone had been; a third nest of a bee consisted of a spherical mass of cells which was found in the centre (filling up the whole hollow) of the nest of a mouse, which was suspended in grass.

Prof. Westwood mentioned that at Oxford he had found a mouse's nest in the centre of one of his bee-hives, surrounded by a number of headless bees.

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*Correction of an Error.*— At page 177, under *Phyllotoma microcephala*, *Klug.*, eight lines from the top, for “the 4th and the 12th or penultimate segments are apodal,” read “the 5th and penultimate segments are apodal.”

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# THE ENTOMOLOGIST.

No. 63.]

MARCH, M.DCCC.LXIX.

[PRICE 6D.

*A Life-history of Fenusa fuliginosa?* — This little Tenthredinideous larva is a leaf-miner, and, like *Fenusa pumila* the bramble-feeder, it is double-brooded: the first brood of larvæ are to be found feeding in the leaves of *Betula alba* (the birch) about the 12th of June, the parent fly preferring to deposit her eggs on a variety of the birch whose leaves have a flannelly or woolly feel when slightly pressed between the fingers. The newly-born caterpillar commences life by eating its way into the interior of the leaf; it then throws itself on its back, a favourite mode of feeding adopted by the leaf-mining Tenthredo-larvæ, and makes a minute circular blotch in the birch-leaf, of a pale greenish colour; at times only one egg is deposited, at others there are two, three, four or five, and occasionally a leaf may be met with containing as many as eight or even nine of these little blotches scattered about its upper surface: the contained larva has twenty-two legs, six of them being thoracical, fourteen ventral and two anal; the fifth and thirteenth segments are not provided with legs of any kind. There is no emission of fluid from the pores of its body, nor are the exuvia expelled from the mine; the head and eye-spots are pale brown, the body white, the dorsal vessel dull green, the thoracic legs white encircled with pale brown rings, and the ventral surface of the 2nd segment is adorned with a black dumb-bell-shaped plate; the two following segments each possess a central black dot; the ventral and anal legs are white, the latter without the partly encircling band which is so commonly observed on the anal legs of mining Tenthredo-larvæ. In a few days some of the little blotches may still be observed occupying an isolated position, but the major portion are found to be more or less confluent; and ultimately the larvæ, by consuming all the parenchyma between their respective mines, convert the whole of them into one general blotch,

and thus from being solitary feeders they become gregarious; but before this state of things is brought about, the caterpillar ceases to feed, shortly afterwards throwing off its skin for the first time, and, like other leaf-mining hymenopterous larvæ, it sheds its skin entire: its body is then spotless. Recovering slightly from the ecdysis, its active little jaws are again in motion, and, whilst thus engaged, its decorative markings slowly unfold themselves, and it is then seen that the plates on the ventral surface of its anterior segments are of a different shape; for example, the 2nd segment has an oblong shining black plate; the decorations of the 3rd, 4th and 5th segments are also of the same colour, but they are square in form, and the 6th segment has a minute black central dot: by and bye the movements of the jaws are observed gradually to decrease, finally ceasing to move. It then enters upon its third stage of larval existence; after moulting it lies in a quiescent state for a time, and at its expiration its masticatory organs are again seen to be in active operation; its head then gains a darker tint, and the back of the 2nd segment has an oblong mark, the outlines of which are of a darker hue; this, in some individuals, is divided down its centre: it is, however, on the ventral surface of the little creature's anterior segments that we perceive the greatest change, the 2nd segment then having an irregular-shaped black plate, whilst the 3rd, 4th and 5th segments have a small circular black plate; the minute black dot previously visible on the centre of the 6th segment having quite disappeared. Arriving at its adult state, the caterpillar sheds its skin for the last time; its length is then about five and a half lines, its mouth is dark brown, its eyes black, its head very pale brown, and its body whitish: at this stage of its existence it loses its appetite, becomes indolent, and remains in its mined abode for a certain period before descending to the ground, which it enters, and, after forming its cocoon, undergoes its pupal metamorphosis. The parasite which infests this larva, on arriving at its adult state, quits the body of the *Tenthredo*-larva, and constructs its own narrow cocoon within the mined birch-leaf. By the 4th of July the larvæ of this *Tenthredo* reach their maximum, and ten days afterwards very few of them are to be found feeding, the perfect insects liberating themselves from their cocoons at

the end of the month: the second brood of larvæ are first noticeable at the end of August and the beginning of September, producing imagos the following spring. The larva of this species occurs abundantly at Shirley in Surrey, Putney Heath, Bishop's Wood, Hampstead, &c.—*Chas. Healy*; 74, *Napier Street, Hoxton, N.*

*Description of the Larva of Eubolia lineolata.*—It rests on the food-plant in nearly a straight position, but attached only by the claspers, the anterior extremity being raised; when annoyed it bends itself nearly double, forming a loop, and it eventually falls from the food-plant thus bent, the two extremities not approaching, but the remainder of the ventral surface closely approximating. The head is quite as wide as any part of the body, rather wider than the 2nd segment, and beset with scattered bristles; it is held prone and touching the legs: the body is transversely wrinkled, and beset with scattered and rather stiff bristles; the colour of the head is dingy brown, with a pale yellowish stripe down each cheek; the dorsal area of the body is ornamented with stripes of different colours; the ventral surface is gamboge-yellow; there is a narrow medio-dorsal stripe of dingy brown, and on each side of this a broadish yellow stripe, intersected throughout by a narrow faint red stripe; on each side, just above the spiracles, is a broadish brown stripe, which shades off gradually into the ochreous-yellow of the back; the feet and claspers are dingy ochreous. It feeds on *Galium verum* (lady's bedstraw), and is full-fed about the middle of September, when it spins a slight cocoon among the twigs of its food-plant, and therein changes to a pupa. I am indebted to the unceasing kindness of Mr. Moncreaff for a supply of these larvæ.—*Edward Newman.*

*Description of the Larva of Hadenæ glauca.*—Rests in a nearly straight position, but falls off its food-plant and rolls in a compact ring when disturbed: the head is narrower than the 2nd segment, porrected and glabrous; the body cylindrical and velvety. The colour of the head is pale testaceous-brown reticulated with darker brown; of the body umber-brown, also reticulated; there is a narrow and somewhat interrupted medio-dorsal stripe, and a double series of oblique markings on each side of this; each marking has a portion darker and a portion lighter than the ground colour;

there is a rather broad and very distinctly defined side stripe, of a dingy white colour, extending from the head to the extremity of the anal claspers; the spiracles are white; the belly is dingy brown, and the claspers concolorous. It feeds on the leaves of *Salix fragilis* (crack willow), and will eat lettuce in confinement. At the beginning of August it changes, on the surface of the ground, to a glabrous brown pupa, with a broad rugose tip to the abdomen, and two incurved spines very distant at the extremity; each abdominal segment has a ring of strong rough spines, somewhat similar to those of the goat moth. I am indebted to Mr. W. Johnson, of Liverpool, for a supply of these interesting larvæ.—*Edward Newman.*

*Life-history of Rhodaria sanguinalis.* — The eggs are laid in July, among the flowers of the common rosemary (*Rosmarina officinalis*), and the young caterpillars, almost as soon as hatched, spin the flowers together, and reside in the domicile thus constructed; they grow very rapidly, and those collected in September attain their full size in less than three weeks: it is extremely sluggish, and possesses none of that frisky vivacity which is so marked a character of the caterpillars of *Pyrausta*, which in other respects it seems so nearly to resemble. The head is small and nearly spherical, but slightly depressed; it is of a yellow colour, with the mandibles and ocelli brown, and immediately behind the latter are two rather large black dots: the body is fusiform, and the 2nd segment, which has no corneous plate, is distinguished by a double ring of circular black dots, each of which is surmounted by a bristle, as well as all the other black dots in different parts of the body. The ground colour is grayish green tinged with vinous red; there is a distinct and broad white medio-dorsal stripe extending from the 3rd to the 12th segment, and a lateral white stripe in the region of the spiracles: the spiracles, which can only be seen with the aid of a powerful lens, are white and surrounded with brown; the ventral area is of a dingy white and without stripes; both the legs and claspers are concolorous with the body; the latter are marked at their base with a triple black dot. When full-fed this caterpillar invariably descends from its food-plant, and seeks among dry moss a suitable place to spin its cocoon, which is of an oval form, a paper-like texture, deli-

cate but tough, and always attached to some solid body: the caterpillar, enclosed in this cocoon, does not undergo transformation to a chrysalis at once, but remains motionless for many months, and it is only five or six weeks before the appearance of the imago that it becomes a chrysalis, which at first is of a dull yellow-green colour, the case which encloses the abdomen being brown, its extremity furnished with seven or eight fine hairs, each of which is bent in the form of a fish-hook. The emergence of the first brood does not take place until the next year, after the chrysalis state has lasted for nearly eight months.

Our friends in Cheshire would do good service to the cause of Entomology by ascertaining the food-plant of this species at New Brighton, and observing whether there are one or two broods during the summer: it occurs very abundantly both there and in Galway, and its habits on the Cheshire coast may be ascertained with scarcely any trouble. The details I have given are from Millière's 'Iconographie.' —*Edward Newman.*

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### *Entomological Notes, Captures, &c.*

*New Method of preserving Coleoptera.* — The following method has now been in use some time, and hence has been fairly tested. Its advantages are very great, so that I make no apology for introducing it to the notice of your readers. The first idea of the process is due, as far as I know, to M. de Vuillefroi, who used it with me in Spain, some years ago, with great success. The specimens may be collected in two ways, according to size and the convenience of the collector. The first and best way, for small species, is by putting them into a bottle containing about half an inch of dry pine-sawdust, in which has been previously placed a small piece of cyanide of potassium about as big as a pea: they will then die instantly. Larger species, and small species which do not fly readily, may be put into spirits in the ordinary way, but the Staphylinidæ and others generally open their wings in this process. The sawdust should be pine-wood, and sifted free from chips on the one hand and dust

on the other, so as to be of an uniform size. For storing the species thus collected a few tin canisters will be found most convenient; a layer of sawdust is placed at the bottom, and then beetles, and so on alternately to the top. The sawdust used in the tins should be dampened (not *wetted*) with a mixture of spirit and one-twentieth part of carbolic acid, which will effectually prevent mould or mites, and will bring the specimens home perfectly fresh and clean. Small species, or specimens from a particular locality, should be wrapped in a piece of rag or tissue-paper, with a little sawdust, and the name of the locality. The specimens collected in spirits should be removed as soon as possible (in a few days at farthest), and transferred to sawdust. When the tins are full, some more spirit and carbolic acid should be poured in and the top soldered down: they will then keep for two years at least. The advantages of this method are manifest, especially in the absence of any danger of breakage or leakage; and it is more than probable that a similar plan might be employed with reptiles, fishes, &c., but for these chloride of zinc suggests itself as the most likely agent to be of service. As the insects do not become rotten by the above process, it is sometimes not so easy to set their legs in the peculiar manner in vogue in this country, but they will have, as a set-off, the advantage of being thoroughly fit for study. When by any chance spirit cannot be obtained, they will keep perfectly in dry sawdust, if the specimens are dried in the air for a few hours first; all that is necessary afterwards being to relax them in the sawdust instead of removing them from it. Jars or wide-mouthed pickle-bottles may of course be used instead of tins, and are more air-tight, but liable to break. — *G. R. Crotch; University Library, Cambridge.*

*Bombyx Cynthia.* — A correspondence has of late been going on in 'Science Gossip' and other journals as to the season of pupation of the silk-producing moth, *Bombyx Cynthia*, the general impression being that the insect passes the winter in the pupa state. I have to record a deviation from this rule, if rule it be. In June last Mr. Ellis, of Batley, kindly sent me eggs procured from moths which had passed the winter as pupæ: they reached me on the 22nd of June, and, having hatched during the transit by post, I found the

interior of the quills "all alive." I at once placed the young larvæ on a vigorous plant of *Ailanthus glandulosa*, and had no further trouble with them until its ample foliage was consumed; they were then transferred to another plant, and so on until full-fed. These larvæ, from the first, fed so freely and grew so rapidly that I at once suspected there would be a deviation from the understood periods of change. It will be seen from the following dates that the larvæ were exactly a month in that state:—Eggs hatched, June 22nd; larvæ spun up, July 23rd to 26th; moths emerged, Sept. 3rd to 10th. Coition took place in several instances, and the eggs are now looking plump and healthy. It will be seen by the above statement that each state occurred twice during the twelve months, except that of larva.—*George Gascoyne; Newark, February 8, 1869.*

*Dicranura bicuspis* at Yarm. — I find on looking at the alder trees that *Dicranura bicuspis* is to be found here, but I have not met with any but empty cocoons as yet. They are to be found on any side of the tree, and some I have seen twelve or fifteen feet from the ground. I enclose one or two for your inspection, but think I am right in the species, as I reared one years ago. I have looked for it on the birch trees many times, expecting from Staintou's 'Manual' it was to be found there. In about half a mile I have seen scores of empty cocoons.—*Wm. Lister; Glaisdale, February 8.*

*Xylomiges conspicillaris*. — On the 8th of this month (February), to my great astonishment, emerged a richly-coloured specimen of this insect, the first I have ever had the pleasure of seeing alive. Its early appearance is due to the fact of its having been kept, with other pupæ, in a box on a warm chimney-piece. It is, unfortunately, crippled,—a mischance apparently of frequent occurrence with this insect, as I have observed that Mr. Horton and Mr. Edmunds, who annually breed two or three specimens, generally record at least one cripple. I am unable to say positively where I found the pupa, but most probably in the neighbourhood of Cheltenham, where I spent June and July last year. If this be correct, I would strongly recommend those in whose locality the insect occurs to dig for the pupa much earlier than the autumn, it being notorious that the sooner we dig for an insect after the pupal change, the better. I have

preserved the shell of the chrysalis. It is intermediate in size between *Tæniocampa stabilis* and *T. instabilis*, the posterior half being more *rounded*, I think, than in either of those species. Under the microscope the anal extremity shows four very fine points, one much longer than the others and *curved*. Having only examined one specimen, I am of course unable to say whether these characters are fixed. I find, as a rule, that the pupæ of *Instabilis*, *Stabilis* and *Gothica* are distinguished by *two* points of *equal* size and not curved. I mention these insects, as they emerge about the same time as *Conspicillaris*, and are commonly supposed to be taken in company with them, that is, in the pupa state. I fear these observations will not aid much in helping to distinguish the aristocrat from the plebeian, but they may be interesting to your readers. — (Rev.) *J. Greene*; 57, *Upper Leeson Street, Dublin*.

*Myrmica domestica*. — Possibly the enclosed little specimens may be of sufficient interest to place under a microscope. If new they will be interesting. A jar of ginger, from India, was (some two years ago) given me by a sea captain, who, I apprehend, brought it direct from China. It remained on a shelf, unopened; it fell from thence two or three days ago, and, in order to remove the sharp pieces of porcelain adhering to the preserved ginger, one by one the pieces were washed in water. The enclosed insects floated on the top. Possibly the like process would produce the like result in all washed ginger; if so, what myriads of little things must be swallowed by the unconscious lovers of this condiment! — *Isaac Sharp*; *Middlesbro', January 14, 1869*.

[The insect is *Myrmica domestica*, a small ant that has for years past infested London houses wherever sweets are kept. — *E. Newman*.]

*Fascination exercised by a Frog*. — The following remarkable case of fascination, exercised by a frog on a butterfly, occurred to me in September, 1868, in the presence of a friend. I had been rearing a number of the larvæ of *Vanessa Urticæ* and *V. Atalanta*. On opening the box one morning a newly-disclosed specimen of *V. Urticæ* flew to the ground, when a large frog leaped from its ambush under a heap of stones and rubbish close by, and took three or four leaps in the direction of the butterfly. When at a distance of about



two feet it halted and looked steadily at its victim, which advanced, with trembling wings, till within range, when the frog lowered its head, and with one gulp swallowed poor *Urticæ*. I afterwards placed three more butterflies down with the same result.—*R. Meldola* ; 8, *Park Place, Leyton*.

*The Early Season.*—The mildness of the winter caused many of the February insects to emerge early in the year in this district; and at the beginning of this month several of the March species put in an appearance, including three or four of the *Tæniocampæ*, *Amphydasis prodromaria*, &c.—*J. Merrin* ; *Gloucester, February 17, 1869*.

*Early Appearance of Lepidoptera this Season.*—Feb. 7th, one male *P. pilosaria* and one male *N. hispidaria*; 8th, two male *N. hispidaria*; 10th, one *E. abbreviata*; 13th, one *T. hyemana*; 17th, one *A. prodromaria* and one *L. adustata*. The above have been taken from a breeding-cage which stands in my garden, fully exposed to the weather.—*Wm. Machin*.

*Early Captures.*—On the 6th of this month I took a trip to Richmond in search of *N. hispidaria*, when I succeeded in taking one fine specimen. Supposing they were just coming out, I went again on the 8th, and took eight more, also five splendid *A. prodromaria*; on the 13th I took eleven, and on the 15th ten, more *N. hispidaria*.—*C. J. Boden* ; 127, *Tooley Street, February 20, 1869*.

*The Early Season.*—During the last fortnight I have found over a dozen larvæ of *Chelonia villica* feeding, and on Saturday last myself and some friends picked whitethorn in full leaf, and showing the bloom-buds almost ready to burst, in a road leading from Hampstead to Highgate. The first week in January I took several specimens of *H. leucophearia*.—*J. W. Russell* ; 10, *St. James' Terrace, Roman Road, Islington, February, 1869*.

*Early Emergence of Orgyia pudibunda.*—I have this day had an *O. pudibunda* emerge from a cocoon in one of my breeding-cages. Is not this very early? Can any of your correspondents account for it? I have taken this month, at rest, two good specimens of *C. spadicea*.—*W. D. Cansdale* ; *Witham, Essex, February 4, 1869*.

*Early Appearance of Larentia multistrigaria.*—English's boy caught some specimens of *Larentia multistrigaria* last

Thursday evening. I never before knew this species out quite so early.—*Henry Doubleday*; *Epping, February, 1869.*

*Cimbex connata*, a new British Hymenopteron of the Family Tenthredinidæ.—M. Van Vollenhoven has lately been engaged in studying the Dutch species of the genus *Cimbex*, and his labours will almost immediately appear in the 'Zoologist,' translated with his usual care and skill by Mr. May. M. Van Vollenhoven appears to find that two larvæ, differing essentially in food and general characters, produce perfect insects almost exactly similar; thus the present species, *C. connata*, feeds exclusively on *Alnus glutinosa* (the alder), while its twin species, *C. Saliceti*, confines itself entirely to the willow: the similarity between the perfect insects is marvellous, but still, when once recognized as species, the slight differences will be found to be constant: thus *Connata* invariably has the two basal segments of the abdomen brown, and a median spot on the third segment of the same colour, while *Saliceti* has the entire abdomen luteous. This character taken alone would be quite insufficient to differentiate species in this genus, yet, combined with a knowledge of the two larvæ, it may serve to assist the inquirer.—*Edward Newman.*

*American Ants.*—In some regions, where the ground is strewn with brilliant grains detached from the crystallized rocks, a curious fact has been observed—the ants' nests are filled with these grains; we quote on this subject the following passage from an account of a well-known explorer, M. Jules Marcou:—"There exists on the high plateaux of the Rocky Mountains a species of ant which, instead of using wood and remains of vegetables to build its house, employs only small stones of the size of a grain of maize. Its instinct teaches it to choose the most brilliant pieces, and the nest is often filled with magnificent garnets and grains of very clear quartz."—*From 'Volcanoes and Earthquakes,' by MM. Zurcher and Margollé, p. 164 (Bentley, London, 1868).*

*Melasis buprestoides, &c.*—I met with a fine male specimen of the above beetle, in the forest near Woodford, on the 30th of last June; it occurred in a spider's web on the trunk of a tree. Among the wood- and fungus-feeders I have taken in the forest I may enumerate the following:—Near

Woodford (beneath bark): *Mycetophagus 4-pustulatus*, *M. multipunctatus* (common), *Triphyllus punctatus*, *Cis bidentatus*, *C. nitidus*, *Endomychus coccineus* (not uncommon in a few localities). Near Epping: *Hylastes angustatus* and *Mycetophagus Populi* (obtained by beating in June). — *George Stockley*; 1, *Rhodeswell Terrace, Rhodeswell Road, Limehouse, E., February 8, 1869.*

*Captures at Cirencester.*—I enclose a list of my captures during the past season, omitting July, when I was away: very abundant species are omitted. *G. Rhamni*, abundant in the spring. *C. Edusa*, saw one specimen. *A. Galathea*, very abundant June 16th. *C. Cardui*, not common. *V. Atalanta*, not common. *V. Io*, not common. *V. Polychloros*, rare. *V. C-Album*, rare. *A. Paphia*, common. *A. Adippe*, June 19th, in plenty. *A. Aglaia*, June 19th, common. *A. Euprosyne*, May 2nd, abundant. *N. Lucina*, April 19th, common. *T. W-Album*, one specimen. *T. Rubi*, May 2nd, common. *P. Argiulus*, not common. *P. Alsus*, May 27th, two specimens. *P. Agestis*, rare. *T. Alveolus*, May 14th, common. *T. Tages*, May 14th, abundant. *P. Sylvanus*, May 19th, abundant. *P. Linea*, not common. *P. Statices*, abundant in one spot not thirty yards square; May 19th, then getting over. *A. Trifolii*, June 16th, several from pupæ. *A. Filipendulæ*, June 6th, abundant. *S. Populi*, two pupæ. *S. Tiliæ*, three pupæ, one of which was found high up an elm in a crevice of the bark. *A. Atropos*, two pupæ, both died. *S. Ligustri*, imago plentiful, flying at honeysuckle. *C. Elpenor*, June 20th, several at honeysuckle. *C. Porcellus*, three specimens at honeysuckle. *C. Bifida*, found cocoon inside an old one of *C. Vinula* on poplar. *N. Dromedarius*, two larvæ—one on birch, the other on beech. *N. Ziczac*, one larva on willow. *P. Dictæa*, one larva on poplar. *L. Camelina*, larva common on birch. *C. Reclusa*, one imago at light. *D. Pudibunda*, larvæ common. *D. Coryli*, larvæ on beech, rather common. *S. Salicis*, June 26th, common. *L. Aureola*, May 2nd, one specimen. *G. Rubricollis*, June 16th, excessively abundant, flying at the top of lofty beeches, few low down. *N. Mundana*, June 16th, common, sometimes at sugar. *N. Plantaginis*, June 11th, very common; smelt horribly when handled. *D. Mendica*, common. *L. Rubi*, saw one specimen. *L. Trifolii*, found one

larva, which died. C. Spinula, rather common. D. Unguicula, May 2nd, common. T. Derasa, June 24th, common at sugar. C. Duplaris, one at sugar. A. Ligustri, several at sugar. L. Conigera, one at sugar. L. Comma, several at sugar. N. Saponariæ, June 16th, common at sugar and by beating. H. Popularis, Sept. 1st, several at light. C. Cytherea, common at sugar. L. Testacea, at light, not common. M. Fasciuncula, one specimen at sugar. M. Literosa, common at sugar. G. Trilinea, very common. A. Saucia, several at sugar. N. Umbrosa, common at sugar, Aug. 8th. N. Augur, common at sugar, June 16th. O. Macilenta, one at ivy-blossom. A. Pistacina, very abundant, Sept. 9th. A. Lunosa, common at ivy. C. Spadicea, rare. X. Citrigo, found a number of pupæ at lime, but all died. C. Affinis, one specimen. D. Capsincola, one specimen at flowers. P. Flavocincta, very common at sugar. A. Advena, common at sugar and honeysuckle. X. Lithorhiza, one specimen at sallow. C. Verbasci, larvæ plentiful in the Royal Agricultural College Botanic Garden. C. Umbratica, common at honeysuckle. B. Parthenias, not common at sallows. A. Triplasia, common at flowers. P. Iota, abundant at honeysuckle. E. Glyphica, May 18th, abundant. P. Ænea, May 2nd, common. E. Apiciaria, common along hedges. E. Dolobraria, one specimen. S. Lunaria, one specimen. C. Lichenaria, common. E. Trilineararia, common, beaten out of beech. E. E. Omicronaria, several larvæ on maple. E. Pendularia, larvæ common on birch. A. Sylvata, June 16th, several. A. Incanata, rare. S. Clathrata, common. M. Euphorbiata, very common in Oakley Park. A. Ulmata, one beaten from elm. L. Adustata, beating. H. Rupicapraria, male abundant, sitting on hawthorn-twigs. E. Albulata, very abundant. E. Subnotata, one specimen. E. Exiguata, common. M. Albicillata, June 12th, several. M. Procellata, not common. A. Derivata, common in April. C. Propugnata, abundant. S. Dubitata, abundant. S. Rhamnata, one specimen. O. Chærophyllata, common. — *F. C. Harman; Crainham's Farm, Cirencester, January 13, 1869.*

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# THE ENTOMOLOGIST.

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## *Critical Notes on Entomological Authors.*

By A. B. FARN, Esq.

Now that entomologists are becoming more numerous in England each year, and consequently the literature having the study of insects for its object is in proportionate demand, it is, I think, a matter to be deplored that books intended for the instruction in, and introduction to, the study of Entomology should be most conspicuously open to the charge of carelessness, either in the writing or revision; or, where this fault cannot fairly be charged, a worse may be urged, namely, that the descriptions of the larvæ—I am speaking now more particularly of the Lepidoptera—should not be original, but borrowed from foreign writers, many of whom (if the larvæ they describe are identical with those for which the several descriptions are used by the English writers), I am afraid, allowed their vivid imaginations to supply the place of sober fact.

In such books as Professor Westwood's 'Butterflies of Great Britain' and Mr. Stainton's 'Manual of British Butterflies and Moths,' the authors of which are generally considered men in the first rank of entomologists, it would only be natural to expect to find reliable information.

To take the first-named work, what can point out more strikingly the carelessness with which the book was edited than the fact that, as a locality for *M. Artemis*, Monks Wood, *Hunts*, is given; for *A. Iris*, Monks Wood, *Cambridgeshire*; for *T. Betulæ*, Monks Wood, *Cambridgeshire*; for *T. Pruni*, Monks Wood, *Herts*; for *T. W-Album*, Monks Wood, *Cambridgeshire*? There is one Monks Wood notorious to entomologists, and the especial locality for *T. Pruni*: this is in *Hunts*, not *Herts*, and I consequently suppose that, after all, only one Monks Wood is intended, and that the counties of *Cambridgeshire* and *Herts* are palpable mistakes, which the

slightest care in revising would have obviated, unless indeed Monks Wood has power of locomotion to rival the famed Wood of Dunsinane.

In Mr. Stainton's 'Manual' one would certainly like to have found the descriptions of the various larvæ given from his own personal experience, or, failing this, from some English entomologist's observations, who could describe the larvæ found in England, so that there should be no doubt as to the identity of the specimens.

I find that out of the sixty-five butterflies described by him as British, fifty-two of the descriptions of the larvæ are compiled from other writers, five are undescribed, leaving eight only that may presumably have been described from Mr. Stainton's own observations.

The following table will show this more forcibly:—  
 Twenty-six from Duponchel—C. Edusa, A. Cardamines, A. Galathea, H. Semele, H. Janira, C. Pamphilus, L. Sibylla, A. Iris, C. Cardui, G. C-Album, A. Adippe, A. Aglaia, A. Selene, A. Euphrosyne, M. Cinxia, M. Athalia, M. Artemis, N. Lucina, T. Pruni, T. W-Album, T. Quercus, P. Alsus, P. Alexis, T. Tages, S. Paniscus, P. Comma; nine from Freyer—C. Hyale, D. Daplidice, A. Paphia, C. Phlæas, C. Dispar, C. Chryseis, P. Corydon, P. Adonis, P. Ægon; five from Sepp—L. Ægeria, H. Tithonus, H. Hyperanthus, V. Polychloros, A. Lathonia; three from Boisduval—A. Cratægi, P. Napi, L. Sinapis; two from H. Doubleday—T. Betulæ, T. Alveolus; two from Ochsenheimer—T. Rubi, P. Argiolus; one from Westwood—P. Agestis; one from Logan—P. Artaxerxes; one from Hübner—V. Antiopa; one from Duncan—E. Blandina; one from Zeller—P. Sylvanus; (descriptions upon such authorities as Doubleday and Westwood are satisfactory, and the source from which they come proves their reliability). Eight descriptions probably original—P. Machaon, G. Rhamni, P. Brassicæ, P. Rapæ, L. Megæra, V. Atalanta, V. Io, V. Urticæ. Five larvæ undescribed—E. Cassiope, C. Davus, P. Acis, P. Arion, P. Actæon.

But to turn to individual examples, and take, for instance, the larvæ of Atalanta: Mr. Stainton tells us they are solitary, differing in this respect from the larvæ of our other species of Vanessa. My experience is quite at variance with this statement. Only during this last summer I found seventeen larvæ

of *Atalanta* (full-fed) on a small bed of nettles, in one or two instances two larvæ close together on the same plant; in another place I found six larvæ on two or three plants, and elsewhere three larvæ on the same plant: the whole of these larvæ were full-grown, and were not more scattered than full-grown larvæ of *Urticæ* or *Io*: I may state that there was an abundance of nettles growing in the immediate vicinity, and that the fact of these larvæ being gregarious cannot be attributed to a scarcity of food-plants. Mr. Stainton states that the larva is "yellowish gray, with a pale lateral line; . . . between the second and third row of spines is a row of black V-like marks." Out of the twenty-six larvæ mentioned above no two were exactly alike in colour, the ground colour being a bright sulphur, and the larvæ unicolorous, greenish yellow, gray, ruddy stone-colour, dull green, drab, lavender only sparsely dotted with black, and black dotted with white; the only point in which they agreed in colour was the yellowish spiracular lines.

The larva of *C. Cardui* is said to be brown, with four yellow lines; those I have reared have been, without exception, of a most unmistakable black.

In Professor Westwood's work already mentioned, the larva of *C. Phlæas* is figured of a light green colour, with two bright stripes of carmine, although he describes it as follows:—"The caterpillar is green, with a *pale* dorsal and lateral line." Mr. Stainton gives the following description of the same (from Freyer):—"Larva green, a *red* dorsal line and a red stripe on each side." The illustration in Professor Westwood's book is at variance with his description, but agrees better with Mr. Stainton's. I have, at the time I write, two larvæ of *Phlæas*, and they do not agree with either of the descriptions given above, being dull green, with no perceptible lateral line, and the faintest of interrupted dorsal lines of a brownish tinge; they are thickly studded with spines, which, when magnified and viewed in the sunlight, are of a bright chestnut hue.

Mr. Stainton quotes Freyer again in the larva of *C. dispar*: there is a well-known entomologist, Mr. Bond, who could have given his experience of this larva, and, speaking from my own knowledge of him, I think, and every one who has the pleasure of his acquaintance will agree with me in

thinking, that he would readily have afforded the desired information, as he is always ready to give information—practical information—if it is only sought.

My experience is very limited, and I would gladly learn more of the habits of our British Lepidoptera; but when I find that what I observe myself is at variance with the written accounts given by our best entomologists, I must confess I become sceptical as to the descriptions of those insects which I have not seen; and I think that, whilst there is a doubt about even the larvæ of our sixty-five species of *Rhopalocera*, entomologists ought to leave no stone unturned to obtain the information practically.

It may perhaps interest some of your readers to know the manner in which I obtained the eggs of *Phlæas*. On the 7th of September I followed a female *Phlæas* for more than two hours over a large pasture, and saw her deposit her eggs on plants of sorrel: she did not fly in the usual brisk manner of *Phlæas*, but only a short distance at a time, and never laid more than one egg on a plant; so that I conclude these are “solitary” larvæ: between each egg that she laid she settled frequently on some tall bent of grass or other prominent post, and basked in the sun. I subsequently followed, and noticed several other females, with the following results:—The egg was almost invariably laid on the midrib of the leaf, close to the stalk; the smaller plants of sorrel were chosen on which to deposit the egg; indeed sometimes a plant with not more than three or four leaves, and those not larger than threepenny-pieces. On three occasions, whilst carefully searching larger plants, I have found two eggs on a leaf, but, in two of these cases, only one egg was laid by the same female: I never lost sight of any particular insect I was following, and carefully avoided frightening it. I noticed that they often settled on the ground, and walked some distance, searching apparently for the sorrel; and in this investigation, as also in selecting a place on a leaf for the egg, they seemed to make use of their antennæ, which were depressed and passed carefully over the leaves.

In a sheltered corner of this field grew a quantity of thistles, and these seemed to be the rendezvous of *Phlæas*, as both males and females were in abundance; and I observed that if a flirtation between any two was likely to end



in the more material object, that of propagating the species, they quitted the assemblage and retired to some distance; and I also noticed that the females, whilst depositing their eggs, avoided that part where *Phlæas* congregated most, although the sorrel grew in greater abundance there than elsewhere. Although I took several females which had been laying eggs (to prevent their going into other fields), and boxed them, they all died without producing any more.

I am sanguine of success, had I the time and opportunity to search in this way for the eggs of *Arion*, *Cassiope*, &c.; and that the stigma attached to English entomologists, of having to say "undescribed" of any larva of our *Diurni*, might be removed.

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*A Revision of the Characters and Synonymes of British Bees.*

By FREDERICK SMITH, Esq.

(Continued from vol. iv. page 9).

Genus *HALICTUS*, *Latr.*

IT is a task involving a considerable amount of study as well as observation to obtain a tolerable knowledge of the species of the genus *Halictus*; I allude merely to the species that inhabit this country; therefore, if I can so subdivide the species, and point out their differential characters, as to aid the entomologist in his investigations, I shall have done some service: with this aim I publish the present paper.

The geographical range of the *Halicti* is very wide; we find them plentiful in some parts of Africa; many fine species are known from Natal and the Cape; the Australian species are numerous; about fifty are described that inhabit Europe; and there can be little doubt that North America will furnish thrice that number. The majority of the eastern species are included in the genus *Nomia*, but these merge gradually into *Halictus* proper; in fact the characters that separate the two genera are sexual, being principally the swollen posterior femora of the males and the enlarged tegulæ. These characters are found in the type of the

genus, *Nomia diversipes* of Latreille, but they are by no means constant in the species usually included in the genus; the neuration of the wings, and the oral organs, are precisely the same as in many true Halicti; but an extensive acquaintance with some of the most abundant species shows the necessity that exists for a certain degree of latitude being given even in the neuration: a precise mapping out of the nervures will not be found to be always constant; one or other of the cells will be, at times, a little wider or narrower, as the case may be.

The genus *Augochlora*, containing the splendid metallic species of North and South America, as well as those of Mexico, are all members of the family Halictidæ. Among the species of the genus *Augochlora* are some of the most brilliant insects of the whole tribe of Apidæ—bees of an entire, rich emerald-green; others adorned in all the tints of golden lustre; and others of the colour of bright fiery copper, or tinted with all the shades of blue and carmine.

The British species of Halicti cannot vie with the exotic species, but many have more or less of metallic lustre, and their history is equally interesting with those of their more brilliantly coloured allies. The Halicti are usually found to colonize in greater or less numbers; sometimes a considerable space of some bare pathway, or of some sloping sunny bank, will be filled with their burrows. Several species of the parasitic bees belonging to the genus *Nomada* are parasitic on them; *N. Solidaginis*, *N. Jacobææ* and *N. furva*, all frequent their colonies. Two species of Stylopidae have also been captured in their company; these are the genera *Halictophagus* and *Elenchus*; the former was captured by Mr. Dale, in August, 1832, in company with *H. æratus*; *Elenchus* was first taken by Mr. Walker, in June, at Southgate; three or four additional specimens have since been captured; but no one has hitherto succeeded in breeding either of the parasites from the bees. These parasites are very minute, the expansion of their wings not exceeding a line and a half. The species which I have observed to be most frequently attacked is *Halictus nitidiusculus*; I have repeatedly captured specimens with one female, and more than once with two females, of *Halictophagus*? protruding from beneath the third segment of the abdomen, but I never observed a bee with a male parasite infesting it.

All the parasites hitherto discovered, and believed to infest the Halicti, no doubt attack the smaller species of the genus: *H. nitidusculus*, *H. minutus*, *H. æratus* and *H. quadrinotatus*, have been captured by myself attacked by Stylopidae, and these would no doubt prove to be parasites of a very minute size; but in the autumn of 1857 I took specimens of *Halictus cylindricus*, and also of *H. albipes*, infested with parasites twice, if not three times, the size of those found in the bodies of the minute Halicti: there is therefore no doubt a most important discovery yet to be made, doubtless of some new genus of Stylopidae. The parasites that I observed in the bodies of *H. cylindricus* and *H. albipes* were females, and these offered no distinctive characters from the other female parasites in the bodies of the minute bees.

It has been stated as a peculiar characteristic of these bees that they burrow by night, "especially by moonlight, when it is difficult to walk without treading upon them; so numerous are they, indeed, that they look like a cloud floating close to the surface of the ground." I have had two or three excellent opportunities of witnessing such a phenomenon when on entomological excursions into Hampshire, and I have repeatedly visited large colonies, at appropriate times and seasons, but I never saw any bees on the wing after sunset: I have found the females turning up their little hillocks of earth, ready to issue forth very early, on fine autumnal mornings, certainly as early as six o'clock; but they rarely take wing, according to my observation, before nine o'clock. The closest allies of these bees are undoubtedly those belonging to the genus *Andrena*; but their economy in one respect differs not only from the genus *Andrena*, but from that of all the other solitary species of Apidae, excepting only the genus *Sphecodes*. Early in spring some of the larger species of *Halictus* make their appearance, but only the females; the other species appear in the same manner, at intervals, all being abroad by the beginning of June: these females, on appearing, immediately commence the formation of their burrows, and proceed to deposit their eggs, but it is not until the different broods are developed that males appear. The females, the produce of these broods, are fertilized by the males, and these afterwards retire to some suitable hybernaculum, and there remain throughout the winter

months, until the warmth of returning spring calls them forth to fulfil the object of their being. This history of their economy has been recently spoken of as a plausible theory: my own observation has long since convinced me that it is simply one of those matters of fact that every one "who runs may read."

The Halicti are preyed upon by two species of fossorial Hymenoptera, being carried off by them and stored up in their cells as food for their own young: one of these destroyers is *Philanthus triangulum*, which I observed at Shanklin, in the Isle of Wight, conveying *Halictus zonatus* to its burrows, although there can be no doubt of the hive bee being its prey usually. The other fossor that attacks the Halicti is *Cerceris ornata*; it preys upon *H. rubicundus*, *H. zonulus* and *H. cylindricus*, female, for I never observed the male bee selected for food.

In my work on the 'British Bees,' published in 1855, twenty-six species are described; by some accident the description of *Halictus villosulus* was omitted: the number of known species is now twenty-eight, an additional one having been since discovered. In a genus, the discrimination of the species of which is a difficulty of no ordinary kind, I think it advisable to separate the species into sections: this is not only advisable under such circumstances, but it may be deemed also necessary in consequence of one division having a somewhat different neuration in the anterior wings: were a strict adherence to the wing or alary system pursued, the last division might appropriately be raised to the rank of a separate genus. In the present revision I have, however, adopted a different system of arrangement: this is simply for the purpose of rendering the task of investigation easier to the student: I give at the end of the revision a list of the species in the order in which I think they group most naturally.

Some authors have adopted the generic name of *Hylæus* for these bees, but Fabricius, who established the genus, did not characterize these insects, but instituted the genus *Hylæus* apparently for the reception of a number of elongate bees, without much regard to their characteristic distinctions, so that we find it a receptacle for *Andrenidæ* as well as for true *Apidæ*; I therefore retain Latreille's generic name

Halictus, the characters of which are given with truth and completeness.

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Genus HALICTUS, *Latreille*. *Apis*, *Linn.* *Hylæus*, pt., *Fabr.* *Megilla*, pt., *Fabr.* *Prosopis*, pt., *Fabr.* *Melitta*, *Kirby*. *Lasioglossum*, *Curtis*.

Div. I.—The females with abdominal fasciæ on the *apical margins* of the segments. (Sp. 1 to 6).

### 1. HALICTUS RUBICUNDUS.

*Apis rubicundus*, *Christ*.

*Melitta rubicundus*, *Kirby*, *Mon. Ap. Angl.* ii. 53, male, female.

*Apis flavipes*, *Panz. Faun. Germ.* 56, 17, female.

*Halictus rubicundus*, *Smith, Brit. Bees*, p. 23; *Nyland. Ap. Boreal.* p. 198; *Schenck, Bees Nassau*, p. 264.

Probably the most abundant and widely distributed species of the genus, found throughout Europe, and also in North America.

### 2. HALICTUS QUADRICINCTUS.

*Hylæus quadricinctus*, *Fabr. Syst. Piez.* 319.

*Melitta quadricincta*, *Kirby, Mon. Ap. Angl.* ii. 51, male, female.

*Halictus quadricinctus*, *Smith, Brit. Bees*, p. 27; *Nyland. Revis. Ap. Boreal.* p. 193.

*Hylæus quadricinctus*, *Schenck, Bees Nassau*, p. 264.

An extremely rare species in this country: I never captured it, and were it not that I found a note in Mr. Kirby's private copy of his 'Monographia'—"Mas. lectus a me September 7mo in floribus Agerati apud Blakenham Parvum"—I should have considered it doubtful as a British species: Mr. Kirby described the female from a specimen in Dr. Latham's collection, and the male from one in Mr. Marsham's, supposed to have been taken in the neighbourhood of London.

In the Kirbyan type-collection are two specimens of the male and one of the female; one of the former sex is much fresher than the other, and is probably that referred to in the above note as having been taken at Little Blakenham. The only example that I have seen, that has been captured since

the specimens in the Kirbyan collection, is a female taken in the Isle of Portland by Mr. Dale. I have received both sexes from Prof. Schenck from Nassau, and I find the sexes, as described by Mr. Kirby, to be correctly united: it will be seen, on a reference to the 'Monographia,' that Mr. Kirby had no positive evidence of their affinity.

The female most closely resembles that of *H. rubicundus*, but the legs are all black, with the tarsi more or less ferruginous; *H. rubicundus* has fulvous pubescence on the thorax, whilst *H. quadricinctus* is thinly covered with cinereous.

The male is like that sex of *H. rubicundus*, but is at once known from it by its mandibles being very broadly dilated at their base, and, when viewed sideways, are angulated in shape, and project downwards in a remarkable manner; the abdomen is so closely and strongly punctured as to have a semi-opaque appearance; the bands are white and rarely interrupted, except that on the apical marginal of the basal segment.

This species will probably be found in the neighbourhood of Ipswich: Barham and Little Blakenham are only a few miles distant. It is widely distributed on the Continent; I possess examples from the South of France, Nassau, Dalmatia, and Sicily, and there are specimens in the British Museum from Italy; it is also found in North America.

### 3. HALICTUS MACULATUS.

*Halictus maculatus*, *Smith, Brit. Bees*, p. 29, female; *Nyland. Revis. Apum. Boreal.* p. 241.

*Halictus interruptus*, *St. Farg. Hym.* ii. 270, not of Panzer.

St. Fargeau has described this insect as *H. interruptus*, and a few pages further on he describes the *H. interruptus* of Panzer: the name he gave to this insect cannot stand. Prof. Schenck thinks Panzer's insect may be a variety of the male of *H. maculatus*: should this be established my name must fall, and *H. interruptus* must be substituted. I give a description of the male, for the purpose of identification, should it be taken.

Male. Length  $3\frac{1}{2}$  lines. Black, with a short white line of pubescence on each side of the apical margins of the first and three following segments of the abdomen. The head and thorax closely punctured; the flagellum fulvous beneath;

the apical marginal of the clypeus pale yellow; the face below the antennæ with short white pubescence. Thorax: the wings hyaline, their nervures and the tegulæ testaceous; the coxæ and femora rufo-piceous; the tibiæ and tarsi pale, the intermediate and posterior tibiæ with a fuscous stain outside. Abdomen oblong, shining, and finely punctured.

I have only twice taken this species, in Hampshire: it is easily recognized by its black colour and the eight white maculæ on the abdomen; the head of the female is subquadrate, resembling that of an *Osmia*. The male is described from a specimen obligingly sent to me by Prof. Schenck, of Nassau. I have examined the unique specimen of the male taken at Kingsbridge by Dr. Leach, and I find it does not agree with that sent to me by Prof. Schenck: it has yellow mandibles, and the labrum is yellow; the first segment of the abdomen is shorter than in the male of *H. maculatus*.

#### 4. HALICTUS TUMULORUM.

*Apis Tumulorum*, *Linn. Faun. Suec.* p. 419.

*Hylæus flavipes*, *Fabr. Ent. Syst.* ii. 305; *Schenck, Bees Nassau*, p. 270.

*Melitta flavipes*, *Kirby, Mon. Ap. Angl.* ii. 55, male.

*Melitta seladonia*, *Id.* ii. 57, female.

*Halictus flavipes*, *Smith, Brit. Bees*, p. 34; *St. Farg. Hym.* ii. 280; *Nyland. Revis. Apum. Boreal.* p. 247.

In his 'Monographia,' Mr. Kirby remarks that "*M. flavipes* is not very unlike the *Apis Tumulorum* of Linneus:" he corrects to some extent the brief description of the 'Fauna Suecica,' but only to the extent of showing that the antennæ are not so long as the body, and that they are fulvous beneath, with the three apical joints fuscous; the body is described as being "*atrum glabriusculum*," and the insect is said to be nearly of the same size as *M. flavipes*. When I examined the type specimens in the Linnean Museum some years ago, I found them covered with dirt or dried mould, and, relying on Kirby's examination of them, took no trouble towards a better examination. I have again had an opportunity of examining them under favourable circumstances. I cleaned the specimens thoroughly, and, having the advantage of a bright day, have drawn up the following description:—

Male. Length  $3\frac{1}{2}$  lines. Head and thorax obscure blue-black, in one example faintly green; the mandibles, clypeus and labrum yellow; antennæ fulvous or yellow beneath; the three apical joints obscurely ferruginous; the legs yellow, with the coxæ, trochanters, and base of the posterior femora more or less rufo-fuscous; a minute yellow spot beneath the wings; the claw-joint of the posterior tarsi ferruginous. The antennæ a little longer than the thorax. The abdomen of one specimen faintly brassy. The two typical specimens are gummed on card, and have been pressed so strongly that the thorax of one example is crushed, and the other has the abdomen reversed, so that the ventral segments are shown: these are rufo-piceous.

From this description it will be seen that *H. flavipes* is identical with "*Tumulorum*." Kirby describes the wings as "*alæ fuscescentes*:" this coloration is only apparent; the two pairs are pressed one on the other, and stuck down with gum; they would be hyaline and iridescent if properly set and cleaned; the antennæ are not longer than in our British specimens hitherto called *H. flavipes*.

#### 5. HALICTUS GRAMINEUS.

*Halictus gramineus*, *Smith, Brit. Bees*, p. 36, male, female.

A very rare species, or certainly a very local one; I have only once taken it; I found a male and female on a flower on Cove Common, near Blackwater, Hants. This species is entirely of a brassy green colour in both sexes: the female has the tegulæ of the wings, the tibiæ and tarsi testaceous; the metathorax dark green; the abdomen thinly covered with griseous pubescence, and the apical margins of the segments have white marginal bands: the male has the clypeus, mandibles, labrum, tegulæ, tibiæ and tarsi honey-yellow; the antennæ are entirely yellow beneath.

There are several specimens in the British Museum, from Devonshire.

#### 6. HALICTUS FASCIATUS.

*Halictus fasciatus*, *Nyland. Apis borealis, Nyland. p. 275.*

In my own collection is a female which Nylander named *H. fasciatus*: it very closely resembles the same sex of *H. Tumulorum*, but it has the marginal bands broader and whiter, and, in my specimen, uninterrupted; the legs are



rufopiceous; the head and thorax green; the abdomen is more convex and is elongate-ovate. Nylander describes the male as being slightly metallic, bluish; the antennæ being ochraceous beneath; the legs yellow, except the coxæ, which are fuscous; the femora sometimes more or less fulvous in the middle.

My specimen was taken at Deal, some years ago; and it is remarkable that I should not have taken it again, having collected so much in that locality subsequently: the proper locality for the insect may be a few miles distant, and I only captured a stray specimen.

FREDERICK SMITH.

(To be continued).

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*Entomological Notes, Captures, &c.*

*Crambus ocella* near *Liverpool*. — During February we usually visit Eastham Wood, to commence the season. This spring some little beating was done by Mr. Roxborough and others, and the first moth he beat out proves to be new to our list: it was submitted to me for identification, and being beyond my powers I sent it to Mr. Doubleday, who returned it as *Crambus ocella* of Haworth, and I think I cannot do better than quote Mr. Doubleday's kind letter, so far as it applies to this most interesting species: he says, "Your moth is the *Crambus ocella* of Haworth, *Eromene ocella* of Staudinger's 'Catalogue,' *E. funiculellus* of Treitschke. The genus *Eromene* consists of seven closely allied species, as far as Europe is concerned; and one or two of them are very common in the plains of Egypt, near the pyramids. Last week I received a box of continental Lepidoptera, mostly *Geometræ*, from M. Constant, of Autun, and he sent me a beautiful pair of *Eromene bella*, taken at Autun: it had never been met with on the Continent so far north before, as the genus is strictly a southern one; and it is very singular that one species should occur here." What surprises me most is the fact of a *Crambus* hibernating, as this has evidently done, or it would not have been beaten out in February. The specimen is fine, but slightly injured on its hinder cilia. The species may be

known by its slightly metallic tinge (like *C. hortuellus* it has its Phycita-like bands and shape), but especially by its row of four black metallic spots near the hinder angle of the upper wings, like those on the small China-mark. On referring to Dr. Staudinger's 'Catalogue,' a copy of which Mr. Doubleday has most kindly sent for my acceptance, I see "*Crambus ocellana*, *Haw.*, 1812:" thus it would seem the species has been found in England before, but to Mr. Roxborough is due its re-discovery.—*C. S. Gregson; Rose Bank, Fletcher Grove, Stanley, near Liverpool, March 21, 1869.*

*Early Emergence.*—From amongst a number of pupæ kept in a room in which there has been a fire about three times a week, I had emerge, last month, *S. ocellatus* (2) and *P. palpina*. This month there have emerged *O. pudibunda*, *I. lactearia*, *E. punctaria*, *E. vulgata* (2), *D. vinula*, *N. dromedarius* and *A. leporina*. Duplicates of many of these are still in the pupa state, although they have all been subject to the same treatment.—(*Rev.*) *P. H. Jennings; Longfield Rectory, Gravesend, November 19, 1869.*

*Lomaspilis marginata in Scotland.*—In your interesting work on 'British Moths' you state that you have not seen Scottish specimens of *Lomaspilis marginata*, and I write a line to say I found it here last year almost as common as *Bilineata* or others of the commoner species.—*W. Cameron; Balquhidder by Crieff, February 23, 1869.*

*Early Emergence of Ptilodontis palpina.*—On the 3rd of March, 1869, one female, and on the 7th another fine female. The above were taken from a breeding-cage in my garden.—*J. A. Clark; 11, Duncan Place, London Fields, Hackney.*

*Vanessa Antiopa at Castle Eden.*—A specimen of *Vanessa Antiopa* was taken in a plantation near Castle Eden, on the 8th of February, 1869, by a gamekeeper named Matthew Barrone: it crept out from amongst some grass by the side of a fire. It is very much frayed, and the margins of the hind wings are totally gone.—*Frederic Raine; South Road, Durham, March 10, 1869.*

*Argynnis Lathonia near Gravesend.*—A beautiful specimen of this rare insect was caught by myself in a field at Milton next Gravesend, the latter part of September last.—*H. J. M. Todd; Gravesend.*—'Science Gossip' for February, 1869.

# THE ENTOMOLOGIST.

No. 65.]

MAY, M.DCCC.LXIX.

[PRICE 6D.

*Life-history of Argynnis Euphrosyne.* — The females may be observed, during the months of May and June, busily employed in examining the leaves of the dog-violet, for the purpose of selecting one exactly adapted to their taste for the deposition of their eggs. The egg has been observed by many entomologists; but I have never had the good fortune to possess one, and therefore adopt the description lately published by Mr. Buckler in the ‘Entomologist’s Monthly Magazine,’ a journal of great usefulness and value, more particularly in the present day of multiplied observations, when it would be utterly impossible to compress them all, especially those relating to technical and exotic Entomology, within the narrow compass of the ‘Entomologist:’ indeed, the “press of matter” and the accumulation of “important papers long in arrear,” so pathetically bewailed by the Editors of the ‘Magazine,’ suggests the propriety of the establishment of a third Journal, an arrangement that would admit of an earlier publication of “important papers,” as well as a better classification of them than can exist under present circumstances. To return to *Euphrosyne*. Mr. Buckler, in describing the egg, says it is “of a blunt conical shape, with its lower surface, which adheres to the leaf, flattened; its sides are ribbed: at first it is of a dull greenish yellow colour, becoming afterwards brownish. Towards the end of June the larva is hatched, then being of a pale greenish tint; after its first moult it becomes browner green, and about the middle of July attaches itself to the stem of the plant, and ceases to feed.” Mr. Buckler failed in keeping the larva through the winter, but delayed the hybernation of one individual until the end of July by keeping it in a hot sunny window: “it was then half an inch long, black and spiny, with a faint indication of a dull whitish stripe along the sides above the feet.” At this stage the larva was killed by mould,

and Mr. Buckler's observations unhappily terminated. On the 9th of this present April, through the kindness of Mr. G. F. Mathew, of H.M.S. 'Britannia,' I received a supply of full-grown larvæ feeding on the leaves of the dog-violet (*Viola canina*), and have thus enjoyed the opportunity of making a careful description. Mr. Mathew informs me they are by no means easy to find; they are seldom to be seen on their food-plant, but generally on a dead leaf in its immediate neighbourhood or a twig above it. They are lively, and feed freely when the sun is on them; but they move slowly and feed sparingly when the weather is dull, and at night they are motionless and abstain from food altogether. The full-fed larva rolls in a ring when annoyed, but very soon unrolls, and crawls with considerable rapidity to a place of supposed safety: the head is almost exactly of the same width as the 2nd segment, rough and bristly; the face is flattish and the crown notched: the body is obese, and the segmental divisions are marked with considerable distinctness; the 2nd segment has two dorsal spines directed forwards; between the 2nd and 3rd segment there is a lateral spine directed outwards; on the 3rd segment are two dorsal spines nearly erect; between the 3rd and 4th segments is a lateral spine directed outwards; on the 4th segment are two dorsal spines nearly erect; the 5th and following segments, as far as the 12th inclusive, have six spines each, two dorsal and two on each side lateral; the 13th segment has four spines directed backwards; all the spines are rough and uneven, especially towards the tip, and are beset with strong bristles; there is no medio-dorsal series of spines, but the dorsal spines constitute two series of eleven each. The head is black, the two dorsal series of spines are gamboge-yellow at the base and black at the tip; the body is black, very slightly sprinkled on the back with white dots, and having a vague but broad pale stripe on each side, composed of irregular bluish white markings, more or less closely crowded, and each generally having a median black dot: this stripe is often intersected by a slender sinuous black line: the legs are black, the belly and claspers pitchy red. On the 17th of April my specimens spun little silken pads on the grass, and from these suspended themselves in the usual manner and became pupæ. The pupa is obese, the head obtusely eared,

the mesothorax broadly keeled, the wing-case ample, the anal extremity rather abruptly incurved, almost reaching the end of the wing-cases, blunt and terminating in two nearly circular disks which are fringed with very numerous minute hooks; the dorsal surface has two warts on every segment as far as the 11th inclusive; these seem to be the dorsal spines simply dwarfed, and denuded of their dermal envelope and bristles, which are shed with the rest of the larval covering. The segmental divisions of the pupa are clearly defined; the prothorax or collar is narrow, the tippets have each a separate case, terminating in a rather sharp transverse ridge or keel at the base of the fore wing; the mesothorax is very broad, and occupies the same conspicuous position as in the imago; the metathorax is rather narrow, and its anterior margin is broadly excavated, the excavation being semicircular; the 4th and 5th segments are narrow, and the remainder have the dorsal area well developed, but the ventral area almost entirely concealed by the wing-cases. The peculiar coloration and situation of spines which I have described in the larva are continued in the pupa, so that the larval and pupal segmental divisions can be identified with the utmost precision: the general colour of the pupa is gray-brown, the wing-cases having two series of paler dots.—*Edward Newman.*

*Description of the Larva of Collix sparsata.*—Ground colour pale whitish yellow, more or less suffused with green. Subdorsal lines green, scarcely visible. Segmental divisions straw-colour. Spiracular line white, on the anal segments yellow; bordered on the upper side with translucent green. Belly translucent, pale yellowish green, without markings. Back wrinkled, studded sparsely with tubercles, each surmounted by a short whitish hair. Tapers slightly towards the head. Rests with head bent inwards. This larva somewhat resembles in general appearance that of *Camptogramma bilineata*. Feeds upon the blooms, buds and leaves of the great yellow loosestrife (*Lysimachia vulgaris*). Full-fed August 10th. The pupa, which resembles those of the *Eupitheciæ*, is enclosed in a slight earthen cocoon. Moth appeared April 20th, 1869. I am indebted to the kindness of Mr. George Carrington, of York, for the larva from which the above description was taken.—*H. Harpur Crewe; The Rectory, Drayton-Beauchamp, Tring, April 20, 1868.*

*A Revision of the Characters and Synonymes of British Bees.*

By FREDERICK SMITH, Esq.

(Continued from vol. iv. page 249).

## Genus HALICTUS, Latr.

Div. II.—The females with abdominal fasciæ on the *basal margins* of the segments; the body entirely black. (Sp. 7 to 22). Sec. 1.

## 7. HALICTUS XANTHOPUS.

*Melitta xanthopus*, Kirby, *Mon. Ap. Angl.* ii. 78, male, female.

*Lasioglossum tricingulum*, Curtis, *Brit. Ent.* x. p. 448.

*Halictus xanthopus*, Brullé, *Exped. de Morée*, iii. 349; *St. Farg. Hym.* ii. 273; Smith, *Brit. Bees*, p. 24; Nyland. *Revis. Apum Boreal.* 238; Imhoff, *Ins. Switz.* No. 3, female.

This is the largest species of the genus found in this country: it is very local, and appears to be usually found on the coast, but it also occurs inland: Mr. Kirby took it at Barham: it has been taken near Ventnor, at Brighton, Hastings, Little Hampton, near Lewes, and at Southend. I have not seen any specimens from the North of England.

## 8. HALICTUS LEUCOZONIUS.

*Apis leucozonias*, Schrank, *Ins. Austr.* p. 406, female; Rossi, *Mantis.* p. 319.

*Melitta leucozonias*, Kirby, *Mon. Ap. Angl.* ii. 76, male, female.

*Halictus leucozonius*, St. Farg. *Hym.* ii. 275; Smith, *Brit. Bees*, 25; Nyland. *Revis. Apum Boreal.*

*Hylæus leucozonius*, Schenck, *Bees Nassau*, 266.

In this country no species is more abundant: the males are frequently found as late as the end of October, in the flowers of the mouse-ear. When in fine condition, the pubescence of the female is griseous on the head and thorax; the latter is strongly and closely punctured on the disk, the metathorax being truncate and rugose; the abdomen finely and closely punctured; the fasciæ at the base of the segments, which are depressed, snow-white and even,

but the first and second are usually more or less abraded in the middle through forming their burrows in the ground.

#### 9. HALICTUS ZONULUS.

*Halictus zonulus*, *Smith, Brit. Bees*, p. 26, male, female ;  
*Nyland. Revis. Apum Boreal.* 241.

*Hylæus zonulus*, *Schenck, Bees Nassau*, p. 266.

The preceding species is very frequently mistaken for this, particularly the large examples ; but the following particulars separate the females :— *H. zonulus* is usually a larger species ; small examples, however, would equal large ones of the preceding : they may be distinguished by the punctuation of the abdomen ; that of *H. zonulus* is more finely punctured, and the basal segment is very delicately and sparingly punctured, whilst that segment in *H. leucozonius* is closely and much more strongly punctured. The males are readily known by those of *H. zonulus* having the legs entirely black, whilst the other species has the first joint of the posterior tarsi white ; in other respects they closely resemble each other, but the clypeus is not so much produced as in *H. leucozonius*, and has its anterior margin very rarely more or less white ; usually it is entirely black.

I have taken this bee at Plumstead Common, at Weybridge, and in Cornwall near Penzance, and have received it from Bristol and Scotland : Dr. Nylander says it is found both in Sweden and Denmark.

#### 10. HALICTUS SEXNOTATUS.

*Melitta sexnotata*, *Kirby, Mon. Ap. Angl.* ii. 82, male, female.

*Halictus sexnotatus*, *Walcken. Mém. Halict.* p. 72 ; *St. Farg. Hym.* ii. 273 ; *Smith, Brit. Bees*, p. 28 ; *Nyland. Revis. Apum Boreal.* p. 239.

*Hylæus sexnotatus*, *Schenck, Bees Nassau*, p. 265.

*Halictus sexnotatus* is certainly a very local species in this country : I have only three times taken it—twice at Weybridge, the female in June and both sexes in September. I have seen specimens taken at Portsmouth.

Distinguished from all the other British species by its coal-black colour, and the six snow-white spots on the abdomen, placed three on each side on the basal margins of the second, third and fourth segments.

## 11. HALICTUS QUADRINOTATUS.

*Melitta quadrinotata*, Kirby, *Mon. Ap. Angl.* ii. 79.

*Halictus quadrinotatus*, Brullé, *Exped. de Morée*, iii. 350 ;  
*Smith, Brit. Bees*, p. 29 ; *Nyland. Revis. Apum*  
*Boreal.* p. 240.

*Hylæus 4-notatus*, Schenck, *Bees Nassau*, p. 266.

The female has a resemblance to that sex of *H. sexnotatus*, but is only a diminutive representative, being three lines long, whilst the former insect is five ; the abdomen has only four white spots, placed laterally on the basal margins of the second and third segments ; the abdomen is finely and closely punctured, but very black and shining : when the insect is in very fine condition the two apical segments are covered with short decumbent griseous down. The male has also four white spots on the abdomen, but these are only found on very recently disclosed specimens ; all the tarsi are white, with the claw-joint ferruginous ; the face covered with griseous down ; the antennæ shorter than the thorax ; and the tip of the clypeus, as well as the labrum, white. The species is found in all parts of the country and throughout Europe.

## 12. HALICTUS CYLINDRICUS.

*Hylæus cylindricus*, *Fabr. Ent. Syst.* ii. 302, male ; *Schenck, Bees Nassau*, p. 274.

*Hylæus abdominalis*, *Panz. Faun. Germ.* 53, 18, male.

*Melitta abdominalis*, Kirby, male, and *M. fulvocincta*, female, *Mon. Ap. Angl.* ii. 73 and 68.

*Halictus fulvocinctus*, *Nyland. Ap. Boreal.* p. 199.

*Halictus cylindricus*, *Smith, Brit. Bees*, p. 30, male, female ; *Nyland. Revis. Ap. Boreal.* p. 242.

*Hylæus abdominalis*, *Schenck, Bees Nassau*, 267.

An extremely abundant insect in all parts of the country, and is found in France, Germany, Switzerland, Denmark, Sweden, Finland and Siberia.

The male is very variable in colour ; some have the three basal segments of the abdomen red, the apical ones being black ; the red segments are more or less marked with black ; many examples are entirely black, with the margins of the segments more or less testaceous.



## 13. HALICTUS MALACHURUS.

Melitta malachura, *Kirby, Mon. Ap. Angl.* ii. 67, female.

Halictus malachurus, *Smith, Entom. Ann.* (1869), p. 77.

Hylæus malachurus, *Schenck, Bees Nassau*, p. 267.

A local insect, and closely resembling the female of *H. cylindricus*. In my work on the 'British Bees' I have given it as synonymous with that species, but, having received both sexes from Prof. Schenck, and also taken it at Cromer in Norfolk, I am able to distinguish it readily from its ally. The type-specimen in the Kirbyan collection is in bad condition, and I was unable to detect any specific difference: Mr. Kirby, in his private copy of his own work, had made a memorandum to the effect that he considered it a mere variety: it was not until I obtained fresh examples that I changed my opinion. It differs from *H. abdominalis* in having the clypeus less produced, the tegulæ black, the base of the metathorax more finely sculptured, and in wanting the sharp edge at the margin of the truncation above and also at the sides; the legs are darker, and the claws of the tarsi black; in *cylindricus* they are pale ferruginous: the margins of the abdominal segments are not rufo-piceous as in the other insect.

The male received from Prof. Schenck resembles that of "cylindricus," but the clypeus is less produced, the antennæ pale fulvous beneath, the metathorax without any enclosed space or ridge, and the abdomen entirely black.

I think it will prove to be a species often mixed with *H. abdominalis*, and probably an insect found in the London district.

## 14. HALICTUS ALBIPES.

Hylæus albipes, *Fabr. Ent. Syst.* ii. p. 294, male; *Schenck, Bees Nassau*, 267, male, female.

Melitta albipes, male, *Kirby*, and *M. obovata*, female, *Mon. Ap. Angl.* ii. 71 and 75.

*Apis albipes*, *Panz. Faun. Germ.* 7, 15, male.

*Prosopis albipes*, *Fabr. Syst. Piez.* p. 294.

Halictus albipes, *St. Farg. Hym.* ii. 287, male; *Smith, Brit. Bees*, p. 32, male, female.

Halictus obovatus, *Nyland. Revis. Apum Boreal.* p. 244.

An abundant insect in many localities; plentiful in the London district, at Walmer, and along the south-east coast,

but apparently rather local: I found it in great numbers in Whitesand Bay, near the Land's End, in autumn; also at Cromer, and on Mousehold Heath, near Norwich. The female is often mixed with that of *H. cylindricus* as small examples of that species; but in the first place it is a much smaller insect, the pubescence on its head and thorax griseous, the enclosed semicircular space at the base of the metathorax is not so coarsely sculptured, and on each side of the space is a smooth rounded edge. The male may always be distinguished by its yellow mandibles, labrum, and anterior margin of the clypeus; the abdomen has the three basal segments more or less red.

15. HALICTUS VILLOSULUS.

*Melitta villosula*, Kirby, *Mon. Ap. Angl.* ii. 62, male.

*M. punctata*, *Id.* 66, female.

*Halictus villosulus*, Smith, *Zool.* vi. 2105; *Nyland. Apum Boreal.* p. 246.

A most abundant species, at once distinguished from the females of the other small Halicti by its coarsely-punctured thorax; the abdomen is also entirely covered with fine punctures; the apex of the abdomen is more pubescent than in most of the smaller species; the metathorax rounded, and the tegulæ dark fusco-testaceous; the legs obscure rufotestaceous, sometimes black. The male is covered with pale erect pubescence; the flagellum fulvous beneath; the thorax with strong scattered punctures.

FREDERICK SMITH.

(To be continued).

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*Entomological Notes, Captures, &c.*

*Black Specimen of Pieris Brassicæ and P. Rapæ.*—I have in my collection a curious specimen of *Pieris Brassicæ*, captured last season by a friend, about two miles from Perth: it is a female, and is of a uniform dusky black colour, both on the upper and under sides; the black spots on the wings are quite distinct, being of a much more intense and shining

black than the ground colour. A similar specimen of *P. Rapæ* was taken here some time ago by an entomological friend, and it is still in his collection: he caught it sitting on a paling in front of his house. Have you ever seen such specimens, or do you know what causes this curious aberration?—*John M. Bramwell; 7, Borassa Place, Perth.*

*Remarkable Variety of Vanessa Urticæ.*—On the 12th of this month I captured a curious specimen of *V. Urticæ*: those parts of the wings which, in an ordinary specimen, are red-brown, in this instance are pale creamy white: the other markings are precisely similar to an ordinary insect. It was my first impression, upon seeing it, that it was a badly-rubbed insect, but upon close examination I found this was not the case.—*Thomas Groves; West-Field Cottage, Richmond, Yorkshire, April 20, 1869.*

*Sesia spheciformis in Staffordshire.*—Last year, in North Staffordshire, I and two other members of our local Naturalists' Field Club were out collecting, when it fell to the lot of Mr. A. Smith to take a pair of *Sesia spheciformis*: they were beaten out together from a bush.—(*Rev.*) *M. W. Daltry; Madeley Vicarage, Newcastle, April 8, 1869.*

*Eupithecia consignata.*—In May last, Mrs. Hutchinson, of Leominster, sent me a number of eggs of *Eupithecia consignata*: on the 17th of May these produced colourless thread-like larvæ, which I placed on a branch of apple: they quickly assumed the colour of the leaves, and fed up rapidly, becoming pupæ June 12th to 15th, and the first moths emerged April 11th. The larva has been so fully described by the Rev. H. H. Crewe (*Entom.* iv. 96), that there is little more to be said about its appearance: in shape it is long and slender, and its head looks disproportionately large, owing to the attenuation of the next following segments: when at rest it sometimes extends itself on the edge of a leaf, at others fixes itself in an erect position in an S-like attitude, and is then scarcely to be distinguished from one of the slender curled filaments which spring from the young shoots of the apple. They are unsocial, irritable creatures, very stationary in their habits, remaining for days on the same leaf, and each larva generally on a separate leaf: when disturbed they swing the fore part of their bodies to and fro viciously, the head looking like the weighted end of a life-

preserver. The pupa is slender and pointed, enclosed in a loose cocoon, covered with particles of earth and lichen, just below the surface of the ground. The insect is so rare in collections that perhaps it may be useful to collectors who have access to apple-orchards if I say that the moth looks like a cross between *Venosata* and *Pumilata*.—*E. Birchall*; April 13, 1869.

*Eupithecia consignata*.—I have this morning (April 20th) bred five beautiful specimens of this beautiful Pug, from eggs sent me last May by Mrs. Hutchinson, of Goatsfield. I have placed them under a glass cylinder, with sprigs of the food-plant in a bottle, and hope to get impregnated eggs. In the course of last summer Mr. Brown, of Cambridge, sent me several larvæ of this insect, which he had beaten from whitethorn in the neighbourhood of Cambridge. This makes the fourth tree upon which this larva has been taken, viz., apple, oak, hazel and whitethorn.—*H. Harpur Crewe*.

*Larva of Abraxas grossulariata feeding upon Sedum Telephium*.—One day last summer I was exceedingly surprised to find a sprig of "orpine or livelong" (*Sedum Telephium*) almost denuded of leaves, and a fat full-fed larva of the "magpie or gooseberry moth" (*Abraxas grossulariata*) busily engaged in devouring the remaining leaves. I have since seen that this peculiarity has come under the notice of other entomologists.—*Id.*

*Cidaria silaceata in Scotland*.—I see that you have received no notice of the capture of *Cidaria silaceata* in Scotland. I have taken nine or ten specimens during the past season. Three other entomological friends have also taken numerous specimens.—*John M. Bramwell*; March 29, 1869.

*Notodonta trepida: Prolongation of the Pupa State*.—The following extraordinary instance of prolongation in the pupal state of the above insect may be interesting to the readers of the 'Entomologist.' In the summer of 1865 I had a small brood of larvæ, which resulted in about a dozen pupæ. Four of these emerged in the spring of '66, and two more in '67. None appeared in '68, and in the autumn of that year I found three dried up. Three remained. Though believing it to be a hopeless case, I brought these with me to Ireland last November, and kept them in a cool room.

On the 4th of this month (April) I placed them in a box on a warm chimney-piece, and this morning (9th), to my great astonishment, a small but perfect insect made its appearance, having remained in its dark cell three years and a half, and having in the meantime travelled from Cubley to Torquay, back again to Cubley and thence to Dublin. I have called this an extraordinary case, and, as regards this species, I should say unexampled. The occasional prolongation as well as acceleration of the pupal state (especially among the Bombyces) is of course a fact well known to all Lepidopterists, and we find both to occur not unfrequently in the genus *Notodonta*; but during many years breeding of most of the species contained in it, I have never known the prolongation to extend beyond the second year. What can be the cause or causes of this retardation and acceleration? The apparently obvious explanation would be, cold in the former case, heat in the latter. But it is very clear that this solution will not apply to the case cited above, for these pupæ displayed an obdurate and callous indifference to two of the hottest summers ('66 and '68) we have had for many years. A subject kindred to this, and presenting even greater difficulties in the way of explanation, is the unexpected appearance (in certain seasons) of rare insects. When asked the reason of this, most people will complacently and thoughtlessly answer, "Oh, it is owing to the unusually hot season." I say thoughtlessly, for, assuming this to be the case, which I neither admit nor deny, can they further explain *why* it is so? I have lately read in the 'Student and Intellectual Observer' (vol. ii. 1869, p. 180) an interesting and intelligent paper on this subject by Mr. E. C. Rye. In the opening part of it he speaks of the temporary *disappearance* of certain water-loving insects, owing to lack of moisture caused by unusual and protracted heat. This is obvious enough. He then remarks that one effect of unusual heat is acceleration of metamorphosis, and that a conspicuous illustration of such acceleration is the increase of broods, consequently increase of numbers of individuals in any species. This seems, at first sight, fair enough; but I venture to think that it will not solve the difficulty to which I have referred, *i. e.*, the unexpected appearance (in certain season) of *rare* insects, *singly* or in very small numbers,

in widely-separated localities. That unusual heat may and does increase the broods, and consequently the numbers, of such common species as *Pieris Brassicæ*, *P. Rapæ*, &c., I readily allow. But take some of the other species enumerated by Mr. Rye, such as *Pieris Daplidice*, *Argynnis Lathonia*, *Deilephila Lineata*, and *Catocala Fraxini*. I think I may assume, without fear of contradiction, that every Lepidopterist will at once admit that the appearance of isolated specimens (one or two of *C. Fraxini*, and a dozen or so of *Daplidice* and *Lathonia*), in widely-separated localities, cannot possibly be attributable to any increase of *broods*. To what then *is* it attributable? "Oh, the hot season." But *why* so? If this be the reason, why did my pupæ of *Trepida* remain unmoved during those two hot summers? Admitting that the hot season does cause the appearance of rare or almost lost (*e. g.*, *C. Fraxini*) species, *how* does it cause it? Let me put a case. In the early spring of '58 (one of the hot summers) I went to Cubley, in Derbyshire. One of the commonest trees in that locality is wych-elm. In the previous year I had been fortunate enough to discover, in Suffolk, that the larva of a much-prized butterfly, *Thecla W-Album*, fed in the seeds of that tree. Consequently I hoped to find it in the new locality. Curiously enough, after days of beating, I found *one* larva. I never saw an imago, and though I regularly beat the trees every spring, for ten successive years, I never met with another larva, or saw the slightest trace of the insect in any shape whatever. Now how did that one larva get there? Was it one of a brood? If so, what became of the rest? If not, where did the parent come from, and what led her to lay one or two eggs on that particular tree? Why did I never see the insect during eleven years, including '66 and '68? Again, in that same year, I found a considerable number of larvæ of a *Bombyx* I much wanted at the time, *Trichiura Cratægi*. I procured a large quantity of eggs from the produce of these, in the autumn. Keeping a few of them, I distributed the remainder. Those I kept duly hatched, and produced moths in '59. I then decided not to keep up the brood, as I could always get the caterpillar when I wanted it; yet, though I diligently searched the hedgerows for miles round, during the nine succeeding years, I never saw another. One more instance. The neighbourhood of Cubley

was, without comparison, the worst locality I ever was in for Lepidoptera. During my stay of nearly eleven years, I never met with a single Fritillary there till last year, when, to my unbounded astonishment, I saw an *Argynnis Paphia*! I was so paralyzed at the sight that I stood helplessly looking at it till it calmly disappeared. Now, what brought it there in '68? Of course it may have flown from some distance, but surely, in such a season, so common a butterfly, if it appeared at all, should have appeared in some numbers. This was the case with *Cardui*, an equally rare visitant. I might multiply examples, but these are sufficient, for the present at least. The more I reflect upon the occasional appearance of *rare* insects in certain seasons, or upon the solitary or nearly solitary appearance of *common* species in a locality which has been fairly worked for ten years, the more am I at a loss to account for these phenomena. That an insect like *Trepida*, which almost always appears in the spring following the autumnal pupa stage, should, as in this case, not emerge till the *fourth* spring, may give us some clew. But *why* it should thus remain is, and I fear ever will be, a mystery. — (Rev.) J. Greene; 57, Upper Leeson Street, Dublin.

*Acronycta Alni* at Gravesend. — I was much gratified, on the 1st instant, by having a very beautiful and perfect male *Acronycta Alni* emerge from amongst my pupæ. I did not find it in the larva state, and must therefore have dug the pupa. I only dug, last autumn, in Cobham Park and just round my own residence: it must have come therefore from one of these two localities. — (Rev.) P. H. Jennings; Longfield Rectory, Gravesend, April 13, 1869.

*Cirrhœdia xerampelina* in Ireland. — In your 'British Moths' you express an opinion that this species is not Irish: it will therefore be interesting to state that the Rev. H. H. Crewe has this year taken a specimen in the North of Ireland. — Edwin Birchall.

*Euperia fulvago* in Sherwood Forest. — In your 'British Moths' you omit this great locality for *Fulvago*. I have taken it by scores at sugar. — *Id.*

*Crambus ocella* in Cheshire. — Two more specimens of this species were taken by one of our working collectors during February last, on the Cheshire coast. I have seen one of them, and hope to see the other this week, as it has

been given to one of my friends. The specimen seen last is not so well marked as that previously reported (Entom. iv. 249), but is still a fair one. Whilst on this subject, may I ask your readers to erase the word "its," Entom. iv. p. 250, line 2? this little word quite destroys the meaning of the sentence. And for "ocellana," p. 250, line 7, read "ocellea."—*C. S. Gregson ; Rose Bank, Stanley, Liverpool, April 12, 1869.*

*Xylomiges conspicillaris.*—I took a splendid specimen of this rare moth from my breeding-cage yesterday. A friend of mine had one emerge some three weeks since, but unfortunately for him it was like the one recorded by the Rev. Joseph Greene, a cripple.—*Thomas Goodyear, Church Road, Malvern Link.*

*Lepidoptera in Epping Forest.*—As early as February 2nd, *P. unguicula* put in an appearance for 1869. I have since bred a series of them, from larvæ beaten in September last; also several *P. Hamula*, *D. Coryli*, *E. punctaria*, *trilinearis*, *pusaria*, *E. illustraria*, &c.—*James Bryant ; 63, Old Broad Street, E.C.*

*The large Wasps.*—In the 'Entomologist' for July, 1868, I made an inquiry as to the sex of the large wasps which are seen in the spring. Last year they were very abundant. The Editor, in answer to my question, expressed an opinion, though in rather doubtful terms, that they were females. I received a note on the subject from Mr. Doubleday (who had observed my query), an extract of which, with his permission, I give here, as I am sure it will be interesting to all readers of the 'Entomologist.' Mr. Doubleday writes as follows:—"No *male* hymenopterous insect that appears in the autumn ever reappears in the spring: all the wasps seen in the spring are *impregnated females*. The male of the common wasp is slenderer than the workers, and has much longer antennæ: they do not appear till late in the autumn, and are seldom seen in houses, and always die when cold weather sets in. No male hymenopterous insect in the world stings."—*James Murton ; Silverdale, Lancaster, April 15, 1869.*

[I entirely agree with Mr. Doubleday as to male Hymenoptera not stinging: the same, so far as my experience goes, holds good with Diptera: the males do not bite.—*Edward Newman.*]



# THE ENTOMOLOGIST.

No. 66.]

JUNE, MDCCCLXIX.

[PRICE 6D.

*A Revision of the Characters and Synonymes of British Bees.*

By FREDERICK SMITH, Esq.

(Continued from vol. iv. page 258).

Genus HALICTUS, *Latr.*

Div. II.—The females with abdominal fasciæ on the *basal margins* of the segments; the body entirely black. (Sp. 7 to 22). Sec. I (concluded).

## 16. HALICTUS LÆVIS.

*Melitta lævis*, Kirby, *Mon. Ap. Angl.* ii. 65.

*Halictus lævis*, *St. Farg. Hym.* ii. 277? *Smith, Brit. Bees*, p. 40.

I have never found this species, of which one perfect and one imperfect example are preserved in the type-collection in the British Museum. Mr. Kirby took the insect at Nacton, in Suffolk, a village on the Orwell, a mile or two from Langard Fort. I have a specimen of an *Halictus* that I thought might prove to be *H. lævis*, from the Isle of Wight, but I am satisfied it is not the same, and I consider it only a large example of *H. longulus*. The typical specimen is about four lines long; the head, thorax and legs have a thin pale ochraceous pubescence; the head closely punctured; the flagellum of the antennæ obscure fulvous beneath towards the apex; the thorax shining, strongly punctured, the punctures not very close, and widest apart in the middle of the disk; the metathorax truncate, rugose at the base above; the tegulæ black, the wings hyaline and iridescent, the nervures rufo-testaceous; the legs rufo-piceous; abdomen oblong-ovate, very glossy and quite impunctate.

## 17. HALICTUS LONGULUS.

*Halictus longulus*, *Smith, Brit. Bees*, p. 39, female.

Of this species I do not know the male: I took the female

at the landslip at Luccomb, near Ventnor, and it was plentiful when first taken by Mr. Bowring: I have not found it elsewhere. It resembles *H. lævis* in the oblong form of the abdomen, but it is distinctly although finely punctured, and the thorax is much more closely punctured, and the insect is more pubescent.

The following is probably its male: it was taken at the same spot as the female, but later in the autumn:—Its length is three lines, the antennæ longer than the thorax, extending to half the length of the abdomen; the flagellum fulvous beneath; the apex of the clypeus white; the thorax and head finely and very closely punctured, the metathorax coarsely rugose; wings hyaline and iridescent, the nervures testaceous; the tarsi pale testaceous; abdomen oblong, smooth and shining, with a little patch of white downy pubescence on each side of the second and third segments at their basal margins.

#### 18. HALICTUS LÆVIGATUS.

*Melitta lævigata*, Kirby, *Mon. Ap. Angl.* ii. 75, female.

*Halictus lævigatus*, St. Farg. *Hym.* ii. 274; Nyland. *Ap. Boreal.* p. 239.

*H. lugubris*, Smith, *Brit. Bees*, p. 33.

*H. fulvicornis*, Smith, *Brit. Bees*, p. 41, male?

A local species, seldom found in any numbers. I formerly considered it probable that *H. lugubris* was its male, but, having taken *H. fulvicornis* in its company, I am inclined to believe that insect is the male: as this is not conclusive evidence, I only place it so provisionally. I have some suspicion of *H. lugubris* being only a variety of the male of *H. zonulus*.

#### 19. HALICTUS INTERRUPTUS.

*Hylæus interruptus*, Panz. *Faun. Germ.* 55, 4, male.

*Halictus interruptus*, St. Farg. *Hym.* ii. 228; Smith, *Brit. Bees*, p. 43.

Of this insect there is a single specimen in the collection of the British Museum; it has a label attached, with the locality of Kingsbridge: it is the only example I have seen. Prof. Schenck is of opinion that this is a variety of *H. maculatus*, male.

## 20. HALICTUS NITIDIUSCULUS.

*Melitta nitidiuscula*, Kirby, *Mon. Ap. Angl.* ii. male.

*Halictus nitidiusculus*, Smith, *Brit. Bees*, p. 43, male, female.; *Nyland. Revis. Apum Boreal.* p. 246.

*Hylæus nitidiusculus*, Schenck, *Bees Nassau*, p. 276.

The female of this species is very like the same sex of *H. minutus*, but may be distinguished by the pale testaceous tegulæ of the wings; the thorax is more finely punctured, and has a faint æneous tinge; the nervures of the wings are paler. The male is readily distinguished by the flocculus of hairs on each side of the ventral segments.

## 21. HALICTUS SUBFASCIATUS.

*Halictus subfasciatus*, *Nyland. Ap. Boreal.* p. 200; *Smith, Brit. Bees*, p. 41.

This species has only, to my knowledge, been taken in Yorkshire, by myself, in 1842. The male has not been captured: the description of that sex in my work on the Bees of Great Britain is from Nylander's work; that eminent hymenopterist thought that *H. fulvicornis* was the male, but I do not agree in thinking so; I consider that insect, in all probability, to be the male of *lævigata*: my reason for thinking so is the fact of *H. fulvicornis* having been taken more than once, in the same locality as *H. lævigatus*, in the neighbourhood of London, where *H. subfasciatus* has not occurred,

## 22. HALICTUS MINUTUS.

*Melitta minuta*, Kirby, *Mon. Ap. Angl.* ii. 61, male, female.

*Halictus minutus*, *St. Farg. Hym.* ii. 277; *Smith, Brit. Bees*, p. 42; *Nyland. Ap. Boreal.* p. 202.

*Hylæus minutus*, Schenck, *Bees Nassau*, p. 269.

This species and the following are difficult to separate: the descriptions in the 'Monographia' will not suffice for that purpose: the antennæ of *H. minuta* are described as being fulvous beneath, while those of *H. minutissima* are said to be black: this is an oversight, as an examination of the type-specimen shows. I have never seen a specimen of either species with antennæ black beneath. *H. minutissima* may be known by its uniformly smaller size, and by the comparatively longer basal segment of the abdomen. The males of *H. minuta* have the antennæ longer than the thorax; those of *H. minutissima* are shorter.

Of this very abundant species, which is found in all parts of the country, I have examples from Denmark and Sweden.

23. HALICTUS MINUTISSIMUS.

*Melitta minutissima*, Kirby, *Mon. Ap. Angl.* ii. 61, male, female.

*Halictus minutissimus*, Smith, *Brit. Bees*, p. 44; *Nyland. Revis. Apum Boreal.* p. 246.

This is the smallest bee found in this country: it is not so common as the preceding, but is widely distributed.

Div. II.—Sect. 2. The body more or less metallic.

24. HALICTUS PRASINUS.

*Halictus prasinus*, Smith, *Brit. Bees*, p. 33, female; *Entomol. Ann.* (1865), p. 93, male.

This species was first taken by Mr. Dale, many years ago, at Bournemouth, but only a female or two, which were sent to me, together with a number of unnamed Halicti: the locality was carefully attached. On my visiting that spot in 1865, I fortunately took both sexes in great plenty; I discovered several large colonies. Last year I found the females just making their appearance in June: not a single male was then to be found. I expect it is extremely local, as I could not find one a few miles distant from Bournemouth; I took a few at Poole, a distance of four miles; and it also occurs at Christchurch, which is about the same distance. It is readily distinguished from all the other species; the female by its thorax being dark olive-green, and by its having the apical segments very pubescent; the pubescence is short, fine and griseous: the male has the apical segment of the abdomen rufo-testaceous, a character not occurring in any other known British species. The size is that of the common *H. cylindricus*,  $4\frac{1}{2}$  lines.

25. HALICTUS SMEATHMANELLUS.

*Melitta Smeathmanella*, Kirby, *Mon. Ap. Angl.* ii. *Append.* 375, male, female.

*Halictus Smeathmanellus*, Smith, *Brit. Bees*, p. 36; *Nyland. Revis. Apum Boreal.* p. 247.

*Hylæus Smeathmanellus*, Schenck, *Bees Nassau*, p. 271.

A species that cannot be confounded with any other, both sexes being entirely of a metallic blue-green: it most closely resembles *H. æratus*, but is a larger insect: sometimes small examples of the male are found agreeing in size with those of *H. æratus*, but the colour will distinguish these.

#### 26. HALICTUS ÆRATUS.

*Melitta ærata*, *Kirby, Mon. Ap. Angl.* ii. 58, male, female.

*Halictus æratus*, *Smith, Brit. Bees*, p. 37.

This very distinct species is supposed by Prof. Schenck and by other continental entomologists to be identical with *H. leucopus*: this is an error, and has probably arisen from the fact of the females of the two species being so very much alike: I will endeavour to point out the differences; the females of *æratus*, *leucopus* and *Morio* are very difficult to separate without an intimate knowledge of them. The female of *H. æratus* may be known from that of *H. Morio* by its always having a green tint more or less bright on the abdomen, and its metathorax is sharply truncate; that of *H. Morio* is rounded, and its abdomen is black: the thorax of *H. æratus* is usually of an uniform green, having a brassy tint; that of *H. Morio* has the metathorax blue-black; some examples occur with the entire thorax blue-black. The metathorax in *H. æratus* is truncate; in *H. leucopus* it is rounded.

The male of *H. leucopus* is distinguished by its pale yellow tarsi and base of the tibiæ.

#### 27. HALICTUS MORIO.

*Hylæus Morio*, *Fabr. Syst. Ent.* ii. p. 306; *Syst. Piez.* p. 321, male; *Schenck, Bees Nassau*, p. 271.

*Melitta Morio*, *Kirby, Mon. Ap.* ii. 60, male, female; *Smith, Brit. Bees*, p. 38; *Nyland. Apum Boreal.* p. 204.

A most abundant little bee, appearing early in the spring, and frequently found on the flowers of chickweed. Its parasite is *Nomada furva*: I have frequently taken them entering the same burrows: it is found in all parts of Europe; I have received it from Denmark and Sweden.

## 28. HALICTUS LEUCOPUS.

*Melitta leucopus*, Kirby, *Mon. Ap. Angl.* ii. 59, male.

*Halictus leucopus*, Smith, *Brit. Bees*, p. 39, male, female ;  
*Nyland. Apum Boreal.* p. 247.

*Hylæus Morio*, Schenck, *Bees Nassau*, p. 271.

*H. leucopus* is a local species, but plentiful where it occurs : its female has the head much more rounded than *H. æratus* or *H. Morio*. I have the sexes taken *in coitu*.

*Proposed Arrangement of the Species of Halictus.*

1. *Halictus rubicundus*, Christ.
2.     "   *xanthopus*, Kirby.
3.     "   *cylindricus*, Fabr.
4.     "   *malachurus*, Kirby.
5.     "   *albipes*, Fabr.
6.     "   *leucozonius*, Schrank.
7.     "   *zonulus*, Smith.
8.     "   *quadricinctus*, Fabr.
9.     "   *sexnotatus*, Kirby.
10.    "   *quadrinotatus*, Kirby.
11.    "   *maculatus*, Smith.
12.    "   *lævigatus*, Kirby.
13.    "   *prasinus*, Smith.
14.    "   *lævis*, Kirby.
15.    "   *longulus*, Smith.
16.    "   *interruptus*, Panzer.
17.    "   *villosulus*, Kirby.
18.    "   *subfasciatus*, Nylander.
19.    "   *minutus*, Kirby.
20.    "   *minutissimus*, Kirby.
21.    "   *nitidiusculus*, Kirby.
22.    "   *leucopus*, Kirby.
23.    "   *Tumulorum*, Linn.
24.    "   *fasciatus*, Nylander.
25.    "   *gramineus*, Smith.
26.    "   *Smeathmanellus*, Kirby.
27.    "   *æratus*, Kirby.
28.    "   *Morio*, Fabr.

FREDERICK SMITH.

*Proceedings of the Entomological Society of London.*

November 16, 1868. — H. W. Bates, Esq., President, in the chair.

Mr. Bond exhibited a specimen of *Tapinostola Elymi*, captured on the Norfolk coast, near Yarmouth; a variety of *Dianthœcia capsincola*, bred in 1867 by Mr. Noah Greening, at Warrington, having the wings on one side abnormally coloured; seven specimens of *Polia nigrocincta*, bred in 1868 by Mr. Greening, from larvæ found in the Isle of Man, and the earthen case in which one of the pupæ had been enclosed.

Mr. M'Lachlan read extracts from the 'Canadian Entomologist,' one recording the occurrence of *Papilio Machaon* in the Hudson's Bay Territory, the other relating to the naturalization in North America of *Pieris Rapæ*, which, recently introduced into Canada, had already spread southwards into Maine and Vermont.

Mr. Bond mentioned the occurrence of a swarm of beetles in Cambridgeshire. A correspondent, writing from Whittlesford on the 30th of September, 1868, said:—"Within the last few days the road, the foot-path, the grass and the hedges from my house, for about three-quarters of a mile, have been covered with them: there must be bushels of them, and although we have had showers, their numbers do not diminish." The species in question was *Gastrophysa Polygona*.

Mr. M'Lachlan exhibited larva-cases, and specimens of both sexes of the imago (winged males and wingless females) of *Enœcylla pusilla*, bred by Mr. Fletcher, of Worcester, an interesting addition to the list of British Trichoptera. The larvæ were terrestrial in their habits, feeding in mosses growing on the bark of trees, and had not any external respiratory organs.

December 7, 1868. — H. W. Bates, Esq., President, in the chair.

The Secretary announced that an exhibition of bees would be held at Milan, from the 10th to the 13th of the month, and would comprise a collection of all kinds of bees, honey, and instruments and utensils employed in apiculture, for which various prizes would be distributed. A silver medal

was also offered for the best mode of taking the honey without destroying the bees.

Mr. Bond exhibited two specimens of *Limenitis Sibylla*, negroes, entirely black on the upper side; and three specimens of *Polyommatus Adonis*, one of which, a male, was remarkable for its extremely small size, another bore on the under side of the fore wings a number of broad bars of black, whilst the third, a female, was partly coloured like the male, the upper surface of the wings being dashed with bright blue, not shading off into the brown, but clearly and sharply defined.

Mr. Dutton exhibited a *Catocala Fraxini*, captured in an empty house at Eastbourne in August last.

Mr. Edward Saunders sent for exhibition a specimen of *Crambus myellus* (*Hübner*), a species new to Britain. It was found by Mr. N. E. Brown, on a blade of grass, near Aberdeen, in July last, and was nearly allied to *C. pinetellus*.

January 4, 1869. — H. W. Bates, Esq., President, in the chair.

Mr. Bond exhibited two diminutive specimens of *Vanessa Urticæ*, about half the usual size of the butterfly; they were two out of fifty or more dwarfs, not all of the same brood of larvæ, which, owing probably to the extreme heat of 1868, had been developed with remarkable rapidity, having remained less than a week in the chrysalis state.

Mr. Bond also exhibited a dark variety of the female *Apatura Iris*, and a very pale variety of *Hesperia Comma*.

Mr. W. C. Boyd exhibited a specimen of *Crambus myellus*, captured by Mr. Adam Boyd some time since near Blair Athol, and which had remained mixed in Mr. Boyd's collection with *C. pinetellus*, until his attention was called to it by the announcement at the previous Meeting.

The Secretary exhibited photographs of nests of *Vespa Britannica* and *V. arborea*, presented to the Society by Mr. John Hogg, by whom the nests were found at Norton, Durham.

Mr. F. Smith exhibited a series of drawings of bees and wasps and their respective nests, and a number of the actual nests, collected in India by Mr. Charles Horne.

Mr. Horne (who was present as a visitor) gave some interesting details on the habits of the insects. The species of



bee which was kept by the natives was, he believed, the *Apis dorsata*. In the North-west Provinces it was necessary to leave the key in every lock, or the cavity was pretty sure to be occupied by a *Pelopæus*: if a sheet of paper was left on a mantel-shelf, it would be fixed thereto by an inserted mud-cell; or a like cell might often be found interposed between a pillow and the bed; even a little hollow in the floor, in spite of the inevitable destruction of the nest, would be filled; and in one case he had known a nest to be placed on the edge of a door, and it was seven times crushed by the shutting of the door, and seven times renewed before the little bee could be induced to forsake the spot she had chosen. Some of the nests exhibited were placed in very singular positions; one, of a leaf-cutting bee, was in the handle or ear of a terra cotta vase, access being obtained through a small hole in the narrow lower end of the handle; another, belonging to a *Pelopæus*, and consisting of a single mud-cell, was attached to a man's signet or finger ring, the stone of which had fallen out, and was fastened to the metal by means of a coil or knot of mud passed through the hole where the stone had been; a third nest of a bee consisted of a spherical mass of cells which was found in the centre (filling up the whole hollow) of the nest of a mouse, which was suspended in grass.

Prof. Westwood mentioned that at Oxford he had found a mouse's nest in the centre of one of his bee-hives, surrounded by a number of headless bees.

*February 1, 1869.* — H. W. Bates, Esq., President, in the chair.

Mr. Edward Saunders exhibited a specimen of *Pachetra leucophæa*, captured by Mr. N. E. Brown, on a gas-lamp at the Redhill Railway Station, on the 14th May, 1868.

Prof. Westwood gave an account of the new vine-pest, *Rhizaphis*, to which his attention was first called in 1863: its mode of attacking the vine was two-fold, or at all events specimens between which he could not find any difference, and which to all appearance belonged to the same species, caused damage to the vines in two very different ways. Some of them sucked the upper side of the leaf, and caused the appearance, on the lower side, of a gall, which was unique in its character; the upper coat of the leaf split into tooth-like

or radiating segments, each with delicate white filaments: beneath this covering the insect sheltered herself, being visible through the interstices between the radiations, and was of the size of an ordinary pin's head; there she laid her eggs, which hatched immediately, and the mother and young together filled the cavity or cell; the young, however, soon left her, and went to the younger parts of the plant, to commence depredations on their own account; a leaf would sometimes be covered with them. Prof. Westwood knew no other instance of an insect burying itself in this manner. The other mode of attack was by sucking the roots or root-lets underground, thereby causing decay and rottenness, and killing the vine; there was not any gall or swelling formed, but he had found the young ones with their parent on the roots. In the South of France whole vineyards had been destroyed; and the pest occurred in England, though whether or not introduced or imported with the vines he could not say. The female alone had been detected in this country, but Dr. Signoret had obtained the male, and referred it to the genus *Phylloxera*. Prof. Westwood wished to hear if any Member present was aware of any instance of the same insect attacking a plant both above and below ground in two such dissimilar ways.

Mr. Frederick Smith was able to mention an instance. The common *Cynips aptera* was well known to form clusters of galls on the fibrous roots of the oak; on one occasion he had found, in Bishop's Wood, Hampstead, on the stem of an oak tree, about a foot above the ground, a large lump which he could only compare to a number of barnacles fastened to the bole; he cut the lump off, took it home, and to his surprise bred therefrom between twenty and thirty specimens of *Cynips aptera*.

Mr. Charles Horne (who was present as a visitor) exhibited the stings of two scorpions which were killed by rats at Benares, on the 19th July, 1865; one of the stings showed a large hole where it had been perforated by the tooth of the rat. The scorpion and rat were placed under a glass cover, and for some time the scorpion fenced about, tail over head, trying to get hold of the rat, but at a favourable moment the rat dodged down and made a rush at the scorpion, bit the sting through the middle, then placed its foot upon the

scorpion, and began to pull off the legs at leisure. In India it was the constant habit of rats to destroy scorpions, and he believed they usually ate them; but in the case above described, the scorpion was not eaten by the rat.

*February 15, 1869.*—H. W. Bates, Esq., President, in the chair.

Mr. Butler exhibited a living locust of the genus *Conocephalus*: it had been received by Mr. Swanzy in London on the 2nd of February, and arrived on board a ship from the west coast of Africa. A swarm of them covered the decks, being at first green, but after about three days they became brown, probably from the absence of green food: notwithstanding exposure for some days to a very heavy sea, many specimens clung to the vessel, and arrived in the Thames alive. The one exhibited had taken nothing since its arrival but a little water, except on one occasion when it was compelled to clean its face of some sugar which Mr. Butler placed on it.

Mr. Smith exhibited a collection of honey bees from all parts of the world, and solicited the loan of foreign species, the localities of which were known, to extend his knowledge of their geographical distribution and assist him in the preparation of a memoir on the honey bees supplementary to that published by him some few years ago in the 'Annals and Magazine of Natural History:' it was very desirable to obtain all the sexes of all the species, as the workers alone did not offer sufficiently marked characters to determine the identity or specific distinctness of many of the forms. Among the bees exhibited there were, a queen of *Apis mellifica* which was with difficulty to be distinguished from a worker; all the sexes of *Apis Ligustica* and *fasciata* (the latter, in the opinion of Dr. Gerstäcker, was only a variety, but Mr. Smith thought he could show its distinctness); the male and worker of *A. Indica*, sent by Mr. Atkinson, of Calcutta; a queen, sent by Mr. Lewis from Japan, very closely resembling the common *A. mellifica*; specimens of *A. nigrocincta* (considered by Gerstäcker to be a variety of *A. Indica*); all the sexes of *A. floralis*, the smallest known honey bee (the worker of which is the *A. lobata* of Smith; *A. dorsata*, the largest and commonest in India and the Eastern Archipelago (of which *A. testacea* was only a variety); and all the sexes

of a bee from the Cape of Good Hope which might be only *A. Ligustica*, but was considerably larger. Mr. Smith also exhibited pieces of the comb of various species; the worker cells of the above-mentioned bee from the Cape were one-tenth smaller than those of *A. mellifica*, ten of the former being equal to nine of the latter; the cells of *A. Indica* were still smaller than those from the Cape; the combs of *A. floralis*, like those of *A. dorsata*, were attached to branches of trees; lastly, there were some cells of *A. dorsata*, made of the same material as the rest, but an inch and a half in depth, which Mr. Smith supposed to be honey-cells.

By an unanimous vote the Secretary was requested to express to the Rev. T. A. Marshall, on behalf of the Members of the Society, their sympathy and condolence with him on the recent loss, through the foundering of a ship between Milford Haven and Barnstaple, of the whole of his library and manuscripts and collection of insects. The destruction of his minute British Hymenoptera belonging to groups but little studied, and of the types of species characterized by Mr. Marshall, was more than a private misfortune, and was an irreparable loss to Science.

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*Entomological Notes, Captures, &c.*

*Why certain kinds of Insects are in some years so much more plentiful than in others.*—One of the subjects adverted to by Mr. Greene, in last month's 'Entomologist,—the cause of the extreme variableness in the comparative abundance of the same species of insect in different years,—has always appeared to me to deserve some inquiry. I do not think the circumstance that the pupæ of many species can lie over for several years is by any means a principal cause of this variation in abundance; because, in the first place, the occurrence is a comparatively exceptional one; and, in the second place, pupæ that remain a long time in that stage are attacked by so many enemies that few are likely to survive. As Mr. Greene, in his excellent 'Insect Hunter's Companion,' points out, pupa-hunters should search early, for if they wait even a month or two, they often find that mice, earwigs, &c., have been beforehand with them. My own impression is

that the cause of this variableness in abundance is to be found in the rapid power of increase which insects possess, and in the great vicissitudes to which they are exposed. Thus, taking two hundred as the average number of eggs produced by a single pair of moths or butterflies (I have known *Amphydasis prodromaria* lay nearly a thousand), it is obvious that, if all lived, a single season would suffice to make a scarce insect common. Upon the average of years doubtless only one in the hundred would in general survive; but the *margin* which the great number of the progeny allows for variation in abundance is enormous, *viz.*, a hundred-fold in one season, ten thousand-fold in two seasons (representing, in double-brooded insects, one year only). Of course the actual numbers produced from a single pair are always far within this limit; but the causes which determine what proportion shall finally arrive at maturity are so variable that the result must be variable too. Let me enumerate some of these causes. 1. *Suitable laying and pairing time.*—Most insects are summer insects. Now a summer insect, in its perfect state, does not in general live many days; if therefore the weather be unfavourable during its brief existence, the insect has not much chance of continuing its species. As to moths, I know it is almost impossible to get some of them to pair, except at a particular time of the night, and on many nights (such as cold and dry ones) not at all. Few butterflies will fly at all, except in sunshine; hence I am not surprised at the undoubted fact that the wet and almost sunless summer of 1860 caused for years afterwards a sensible scarcity among many species of diurnal Lepidoptera. A butterfly may be said to be born in a muslin dress, and to have “nothing else to wear;” so that if the weather prove wet all its life, it is natural that it should stay at home, and “grow, live and die in single blessedness.” 2. *Frosts in Spring.*—I suppose there are more larvæ feeding at the end of May than at any other time of year. The slaughter among them must be prodigious when snow and frost, with biting north-east winds, come on, as they did in the Epsom week, 1867, blackening and killing the tender leaves and twigs of the oak trees. Minor causes, such as an increase in the number of Ichneumons, birds, or other foes to insects, floods in winter, &c., will occur to every one. Now imagine

a species of insect, the ordinary number of individuals of which in a given copse would be a hundred pairs; that the pairing time is so favourable that twice the average number of eggs is laid; and that, owing to a scarcity of birds, or to very genial weather prevailing, only half the usual number of young larvæ die; the result will be that the next generation would consist of four hundred pairs: suppose all this happened to that generation also, then the numbers in the following generation would be swollen to sixteen hundred pairs; and all this, in double-brooded insects, might happen in a single year. Suppose now that the next generation comes to maturity in weather so unfavourable that only one-fourth can find suitable mates, and that, when the eggs laid by this proportion hatch, a spring frost comes and kills seven-eighths of the young larvæ, with the leaves they are feeding on; this would bring down their numbers to fifty; and a concurrence of similar causes, during the next generation, might reduce the *sixteen hundred* pairs to *six* pairs in the space of a single year. One other cautionary suggestion, and I have done. Scarce insects must be far more numerous than the number of them captured would lead one to suppose. Considering how small a proportion the field searched by entomologists bears to the whole country over which the insect ranges, and how large a number in the hunted district must escape observation, a species, the captures of which are recorded in units, must exist in many thousands, probably often in millions.—*F. Merrifield; Brighton, May 19, 1869.*

*Orgyia antiqua.* — In your 'Illustrated History of British Moths,' page 40, I notice a remark on the lengthened period over which the hatching of a brood of *Antiqua* eggs extends, and that Quartermaster-Sergeant M'Laren is credited with the discovery of this interesting fact; but if you refer to the 'Entomological Magazine,' vol. ii. page 318, you will see that the gallant soldier's observation has been anticipated by Mr. Jas. Fennell thirty-five years since.—*E. Birchall; April 20, 1869.*

*Extraordinary Vitality of a Pupa.* — Early in January of this year an intimate friend of mine brought me a pupa which his cook had taken out of the craw of a pheasant, together with several acorns and other food, the pheasant having been hung in his larder for nearly three weeks. As

the pupa seemed uninjured, I placed it in a box by itself, and on the 24th of April a fine male specimen of *Amphydasis betularia* emerged from it.—*Bernard Hartley; Park View, Pontefract, May 20, 1869.*

*Cirrhædia xerampelina.*—I have this spring taken forty-one larvæ of this species from the trunks of ash-trees in my fields and in the immediate neighbourhood, and I believe they have all fed up and are now in the pupal state, as I kept the larvæ in glass jars, and can see two or three pupæ under the moss near the glass. I have for several years past searched carefully for the larvæ of this insect, but have never before been successful in meeting with it.—*Id.*

*Mosquitoes in England.*—If we get a continuation of this fine sunny weather, I have no doubt the daily papers, as well as some other periodicals, will be inundated with letters on “mosquito flight” or “mosquito bite,” as they were last year when I was in the “land o’ sketers,” as they say across the Atlantic. In the summer of 1866 I was on a visit to the Rev. C. J. S. Bethune, of Cobourg, Upper Canada, who is a capital entomologist, and Secretary of the Canadian Entomological Society, and we both came to the conclusion that the “dreaded mosquito” was none other than the *Culex pipiens* of our own marshes. Some of your readers may perhaps laugh at this, and, as far as my own opinion is concerned as an authority, they have quite a right to do so, as I do not even pretend to scientific knowledge in Entomology; but Mr. Bethune has, I believe, compared English and American specimens, and could find very little, if any, differences. Many a time, when flapper-shooting in the marshes in Berkshire, have I been bitten by gnats, which at the time I took to be *C. pipiens*,—at least they appeared to agree with descriptions of that insect; and although not in “countless thousands,” as they are in Newfoundland, Nova Scotia, and some other places I have visited, they were sufficiently abundant to be very annoying, especially in the dusk of the evening or at early morning. However wrong we may have been in giving both or either insect the specific name of *pipiens*, one thing is satisfactorily determined, that both the common gnat and the true American mosquito belong to the genus *Culex*, and that they resemble each other very much.—*Henry Reeks; Thruxton, May 3, 1869.*

*Early Appearance of Stauropus Fagi.* — On the 2nd of May, while collecting in Headley Lane, near Box Hill, I had the pleasure of taking a fine male specimen of the above, just emerged from the pupa.—*E. Harper, jun.*

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*Duplicates, Desiderata, &c.*

*Exchange.* — Larvæ or pupæ of *O. Potatoria* for larvæ or pupæ of *C. Dominula*, *C. Villica*, *B. Rubi*, or any other local larvæ or pupæ. — *Wm. Johnston*; 25, *James Street, Gateshead-on-Tyne.*

*Duplicates.* — I have a great many pupæ of *Cinxia*, which I should like to exchange or sell. *Desiderata.* — *Adonis*, *Corydon*, *Argiolus*, or any other local species. — *A. Pratt*; *The Promontory, Strand, Ryde, Isle of Wight.*

*Duplicates, &c., for Exchange.* — Larvæ, pupæ, imagos; a setting and drying-house, with ten corked setting-boards of various sizes, and a corked back for a store-box; also some other setting-boards of various sizes. My wants are numerous.—*Frederic Raine*; *South Road, Durham.*

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*Insects for Sale.*—*W. Downing*, of Hoddesdon, Herts, has on sale some fine *A. Pictaria*, *T. Juniperata*, *A. Derivata*, *E. Pusillata*, *A. Fuliginosa*, black *Betularia*, *A. Urticæ*, *P. Hippocastanaria*, *Carpophaga*, *Elymi*, and the rare *N. Angustella*, price 1s. 6d. each; and many others. Larvæ of *Dominula*, *Rhomboidaria*, *Belgiaria*, *Citrago*, *Subtusa*, and many others. Insects and pupæ bought or exchanged.

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*Preserved Larvæ.* — Specimens of preserved larvæ for the cabinet, from 4d. each. *C. Caja*, *O. Potatoria*, *E. Lanestris*, *B. Neustria*, 4d. each. Six species post free for twenty-four stamps. A list of species and price sent on receipt of stamp. — *R. L. Davis* (*Preserver of Larvæ to the British Museum*); *Waltham Cross, Herts.*



# THE ENTOMOLOGIST.

No. 67.]

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[PRICE 6D.

*On an undescribed light-giving Coleopterous Larva (provisionally named *Astraptor illuminator*). By ANDREW MURRAY, Esq., F.L.S.\**

THE purpose of this communication is to make known to the Society a new light-giving coleopterous larva. Whether the hitherto unknown larva of a light-giving species whose imago is known, or a new type altogether, may be doubtful; but at any rate, I believe, it is something entirely unknown to entomologists, and therefore a step in our knowledge which cannot fail to be interesting.

I am enabled to do so by my friend Mr. Alexander Fry, the well-known entomologist, who, if he too seldom contributes with his own pen to the literature of his favourite science, at least makes some amends by at all times most liberally communicating his stores of information to others, and by allowing and encouraging them to make use of them in his stead.

Mr. Fry passed eleven years of his life in Brazil, during the whole of which period he diligently collected and observed in almost every branch of Natural History, and brought back with him probably the finest collection of Brazilian Coleoptera that anywhere exists. Nor is the multitude of observed facts which he has stored up in his notebooks and his memory a whit less remarkable than the contents of his cabinets. Every entomologist who is working, or of late years has worked, at any group in which South-American species occur, must confess his obligations to Mr. Fry; and so far as I myself am concerned, I gladly proclaim that the interesting communication which I now make is only a very small item of the scientific obligations under which I lie to that gentleman.

\* Reprinted from 'The Journal of the Linnean Society,' Zoology, Vol. x. p. 74.

A light-giving insect of a new type is not an every-day discovery. Light-giving insects at all are one of the wonders of nature. As yet we only know four or five types of them—one in the Myriapods (the Scolopendræ), another in the Homoptera (the Fulgoridæ or candleflies), whose light-giving properties still require confirmation, and two in the Coleoptera (the fireflies and glowworms). It is possible, indeed, that there may be three types in the Coleoptera, because Afzelius relates that the Paussus which he described under the name of Paussus sphærocerus was a light-giver. It dropped from the ceiling of his room at Sierra Leone on his paper at dusk; and he observed that its globular antennæ were phosphorescent, and that it bore them before it like lamps to light it on its way. Those who are fond of tracing the adaptation of structure to condition of life have thought that this was an instance to the point; for the other Paussi are inhabitants of ants' nests; and if we might judge of their feelings by our own, it would no doubt be very convenient to have such a pair of carriage-lamps permanently borne in front, without, what now forms the burden of our cabmen's complaint, expense for oil, risk of breakage, or trouble of cleaning. But in addition to our ignorance of the true wants and feelings of these little creatures, it so happens that the species which Afzelius saw and figured has never since been met with; and the phosphorescence of the antennæ, either in this or any other Paussus, has not yet been confirmed. If we deduct it, we only know the fireflies and glowworms as light-givers among beetles. Of both of these, many species have been described, and doubtless many more remain to be discovered; and I should never have dreamed of treating the occurrence of merely a new species of a known type as a matter of any special interest. But it is different with a new type, or the unknown larval form of a known type.

The difficulty which I have in dealing with it is that it is very doubtful that we really do know the larva of the firefly. The larvæ of the glowworms we know perfectly. They live in the open air, and their light betrays them. The larvæ of the fireflies, on the other hand, we may presume do not live in the open air. Like the rest of the Elateridæ (to which family they belong), they live in the heart of rotten timber, or otherwise bury themselves in vegetable tissues. Living

specimens of the perfect insect have been found in rotten wood, and sent home in it to this country, which they have reached alive. One would think, from analogy with the glowworm, that, if the larva of the firefly had been observed, it would readily have been recognized from being phosphorescent; for not only is the female of the glowworm luminous, but also the male; and the larvæ, and even the eggs, are said to be faintly phosphorescent. But supposing the larva of the firefly to be phosphorescent and to live in the trunks of rotten trees, it may very well be that they have been often seen in the day-time, and their phosphorescence not observed. Entomologists may go into the woods at night with nets and lamps to catch nocturnal moths; but we doubt if any one ever went to break up rotten trees. That could be as well done and the captures as well made in the day-time, and would consequently only be done with a purpose, and that the purpose of settling this very question, an idea which, so far as I know, has not yet occurred to any one possessed of the requisite facilities—that is, living in the American tropical countries.

One important means which probably exists of determining its larva has thus never been put to use; for I can find no mention anywhere of a phosphorescent larva belonging to or resembling those of the Elateridæ, or any other than the glowworm. There has, indeed, been described a supposed larva of the firefly. Erichson describes in a few words a larva which he thinks may be referred *with doubt* to the *Pyrophorus noctilucus*, but he says nothing of phosphorescence; indeed his specimen would be dead, and either pinned or preserved in spirits, and consequently could not show it. Moreover the description, according to Candèze and Chapuis, comes nearest to the larva of *Alaus oculatus*; and this is widely separated from the present larva. So far as our materials go, therefore, the inference to be drawn from them is opposed to this species belonging either to the fireflies or the glowworms. I am bound to say, however, that I do not think Erichson's reference can be taken as of much weight. It was obviously a mere guess as to the relationship of an unknown larva; and if we put it aside we shall immediately see that, while there are some points in the present larva which may be used as arguments in favour of its being

perhaps the larva of the firefly, there are others which seem more opposed to it.

I shall now give an account and description of the larva in question. It has been seen by at least three gentlemen, whose accounts all correspond.

It was first seen by Mr. Fry himself, on returning to Rio one evening when night had fallen. He was accompanied by a friend, and both were on horseback. His eye was caught by a brilliant luminous beam, obviously an insect creeping across the road before them. He dismounted and picked it up. On taking it into his hand he found that its head gave out a bright red-coloured light like the red danger-lamp of a railway carriage. It was persistent and especially visible on the top and back of the head; and down the side of the body there was a succession of exceedingly bright white lights, which were not visible all at once, or at all events were not always visible all at once. These lights streamed from the spiracles, and, as the insect moved, ran in succession, one after the other, from the head to the tail, down the sides, like the movement of the ribs of a serpent or the segments of a worm, or what it really is, the segments of a caterpillar; there was another larger light in the tail, which was also white and not persistent. Mr. Fry took it home with him to try and rear it; but it died in a day or two. His memorandum made at the time is in these words:—

“No. 368.—Rio.—Red light in the head, white light in the tail, and one light on each side at each segment of the body. Light in the head permanent, the others showing by flashes.”

Mr. Fry remembers once again seeing a specimen at St. Theresa, close to Rio, but he does not recollect what became of it.

Mr. Frank Miers saw either the present specimen when it was alive, or some other; and his account of it wholly corresponds with Mr. Fry's. His expression for the colour of the head is that it was “garnet-coloured.”

Mr. John Miers, jun., met with another specimen independently of Mr. Fry, and, he thinks, sent it home to his father, Mr. John Miers, the celebrated botanist, who, however, does not remember anything of it; nor, so far as a cursory examination of his entomological collection goes, does

it appear to be in it. It is not surprising, however, that one who had seen the insect in life and been the sender, should have a more vivid recollection regarding the *envoi* than the receiver, who could at the utmost have seen no more than such an insignificant brown morsel as that exhibited. Both Mr. John Miers, jun., and Mr. Frank Miers speak of the specimens they saw being larger than this preserved one; about an inch in length is their estimate, while the latter is little more than half an inch.

It is probably to an allied species that Lieut. Oliver, R.A., refers in a paper "On two routes through Nicaragua," which he read at the Meeting of the British Association, at Dundee, in 1867. He says:—"At night the fire- and lantern-flies were magnificent. They exhibit, when at rest, only two pale green lights on each side of their head; when excited or in motion, the abdominal light shines bright, of a more reddish hue, and the quicker they fly the brighter the light. A lovely glowworm, too, we saw, with similar lights, but smaller; on being touched, a series of minute sparks like pearls scintillated down its entire length in two rows."—(p. 21).

The above accounts seem to show that the larva was full of luminous matter, that the luminous matter was white, and that it appeared red on the head from shining through the chitinous texture, whereas its natural white light was seen when the animal in its breathing or motion opened the port-holes of its spiracles. That the light was not seen through the rest of the surface of the body as through the head, would of course be due to the greater thickness of the chitinous and muscular covering.

Now this general occupation of the body by the luminous matter is the one point on which there is some coincidence with the firefly. The light in the glowworm is limited to the terminal segments of the abdomen; in the firefly, on the contrary, the light occupies, besides the spots on the thorax, where they are most observed, the whole interior of at least the middle of the body; and wherever there is a chink or joint the light streams through. This is a fact noticed by every one who has observed them in their native country. On bending the body and raising the elytra, a much more intense light is seen to exist in the interior than in the two

spots on each side of the surface of the thorax. This is sometimes observed even while the insects are flying about, if the position of the spectator is such that the under side of the body is exposed to him. Then he sees a light much more brilliant than usual, appearing and disappearing with the motion and change of position of the insect.

I may here observe that the diffusion of the light throughout the whole body, as in this new larva, is a phenomenon more easy of comprehension than is its limitation to the terminal segments of the abdomen as in the glowworm, or to the nasal projection as in the *Fulgora* (always supposing the reported luminosity of that organ in them to be really true). It appears to me that the phenomenon in all these insects is one of chemical action, and that the chemical action is that of oxidization produced by respiration—in other words, combustion. This is supported by the fact that, if we place a glowworm in oxygen, the light becomes greatly more brilliant, the process of oxidization by respiration being assisted by the greater amount of oxygen surrounding the animal. It is the same operation as the combustion of the carbon in our own bodies when exposed to the action of oxygen in the lungs; only in the insect the lungs, instead of being confined to the thorax, are replaced by a series of tracheæ which ramify through the body. In our own bodies and in those of most other animals the combustion in question is carried on too feebly and in too diluted a state to produce light; but it is easy to conceive that a more active operation of oxidization might be sufficiently energetic to produce phosphorescence without actual flame; and I am very much disposed to believe that the stories of odylic light averred to have been seen by highly sensitive mesmerisers streaming from the bodies of others, are only instances of such exceptionally active oxidization, going on perhaps in a state of the atmosphere unusually charged with oxygen, and seen by persons possessed of unusual acuteness of vision or nervous sensibility. But although this theory may to a certain extent explain the phenomenon of luminousness in those animals or plants where it is observable in every part subjected to the influence of oxidization, it is more difficult of application in those cases where the light is confined to some special part or organ, as in the glowworm. In it the light is confined to

a special organ, which is supplied with special nerves which control the display of light at the will of the animal. Still I hold that that light when put in action is the result of slow combustion.

There is obviously much room for interesting experiment and observation regarding the luminosity of insects. I have alluded to the greater splendour of the light when the glow-worm is placed in oxygen. Might not the combustive action be so increased by continued replenishment and saturation or condensation of oxygen as actually to ignite the animal by its own respiration? Might not luminosity be detected under similar circumstances in other insects which are not usually luminous, or in some parts of them?

It is possible, too, that there may be more than one means by which the phenomenon of luminosity is produced. We too often mislead ourselves by referring similar effects to one cause.

But, to return to the affinities of the larva in question, the general diffusion of light throughout the body indicates a greater resemblance to the firefly than the glowworm.

The new larva, however, differs materially from the normal type of Elateridous larvæ: *they* are all nearly rounded, cylindrical, hard worms, like a bit of wire (the wireworm is one of them); whereas the present species is only convex on the upper side, which has something of the consistency of the Elateridous larvæ; but the under side must have been softer, although still of a pergaminous texture; for it is wrinkled and flatter, or even somewhat concave, instead of being linear, and the segments not fitting into each other so as to make an even wire-like surface, but telescopically fitted, the anterior one always being a good deal wider than the one next behind it. The terminal segment in the great majority of cases (not in the wireworm, which is one of the exceptions), and very often every segment, has a roughened, finely papillose part, which serves as a rasp or file-like surface by which to keep a hold on the walls of its burrow by pressing against them when it desires to move, the minute legs at the anterior end being obviously insufficient to have much effect on the long body, which extends far behind. This larva has nothing of that sort.

On passing in review the whole of the larvæ of different

families of Coleoptera as yet described or figured, however, I can find none which quite suits the present form; but I think it comes nearer the Elateridæ than any other. The form of the head and mouth is nearer that of it. There are some of the Heteromera which also come near it, and, curiously enough, in a group of them which approaches the Elateridæ in form and appearance, as *Serropalpus*, *Dircea*, &c. Size goes for little, as, unlike the perfect beetles, the larvæ grow; and, besides, there are species of firefly small enough almost to suit this larva. Another reason which inclines me more than anything else to suspect that a species of firefly may be the imago of the present larva, is the fact that we know no other luminous beetle in Brazil except them and the glow-worms; and as the light is found to exist both in the larva and imago in the only instances where we know both, it seems an inference which we are bound to admit as probable at least, that it will be so in all. There should therefore be in Brazil a beetle the larva of which emits light from every exposed point; and although a common light-giving larva which lives in the heart of rotten trees may easily have escaped detection, it is extremely unlikely that a light-giving perfect insect, new in type, could possibly have done so. There would thus be no other to refer it to except the fireflies. The extreme rarity of the larva, it having only been seen twice by Mr. Fry, is also in favour of its habitat not being known; and the fact of its having been seen at all, and, above all, creeping across the road, may have arisen from the rotten branch in which it lived having been broken off, and it dislodged from its natural position, and pounced upon by Mr. Fry before it had succeeded in procuring a new nidus for itself. This, however, is mere conjecture and speculation; the fact remains that, although apparently allied to the Elateridæ, it differs from their larvæ in several very material respects, and that in point of fact it was found, not in wood, but creeping along the ground. Future observation must determine its true relations; and the first step to doing so is for those entomologists who may have the opportunity, to ascertain what the larva of the firefly really is. It must exist in myriads; and doubtless, if any one would bring home (to their own house in tropical America we mean), as our skilful collectors in Europe do, some stumps of wood



full of larvæ, and put them in a drawer and examine them at night, the question whether this was the larva of a firefly, or not, would be soon solved.

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*Proceedings of the Entomological Society of London.*

March 1, 1869. — H. W. Bates, Esq., President, in the chair.

Mr. Bond exhibited specimens of *Heliothis armiger* from the Isle of Wight, Java and Australia. The insect had been taken in Java by Dr. Horsfield; the Australian specimens were captured by Dr. Madden.

Mr. Boyd exhibited dwarfs of *Vanessa Urticæ*, *Smerinthus Populi*, *Saturnia Carpini* and *Pygæra Bucephala*, all bred in 1868, by Mr. Davis, of Waltham Cross, and scarcely more than half the ordinary size of the species: this was attributed to rapidity of development, owing to the heat of the summer.

Mr. J. J. Weir exhibited a mass of larvæ of *Tipula* from Blackheath, where acres of land were so infested that there seemed to be more larvæ than earth. In Greenwich Park the grass was, at this early period, almost destroyed by them. Rooks, starlings and sparrows appeared to be busy in the neighbourhood, but no diminution in the number of the grubs was observable.

Mr. Bond mentioned that he had once known four hundred of these larvæ taken out of the crop of a pheasant.

Mr. Weir read a paper "On Insects and Insectivorous Birds, and especially on the Relation between the Colour and the Edibility of Lepidoptera and their Larvæ."

Mr. Weir's experiments were suggested by the remarks of Mr. Wallace at a previous Meeting: the conclusions at which Mr. Weir arrived were, that, as a rule, hairy and spinous larvæ were rejected by birds (unless the cuckoo were an exception); but he doubted whether the mechanical difficulty of swallowing them was the cause of their rejection, and rather thought that the hairs were the concomitant of a disagreeable quality of which they acted as an indicator; that the bright and gaily-coloured larvæ were, as a rule, refused; but that smooth larvæ of a greenish or dull brown colour, such as are for the most part nocturnal in their

habits, and those which simulate the leaves or twigs of trees upon which they live, were eaten with avidity.

Mr. Butler read some observations on a cognate subject, but relating more especially to the consumption or rejection of larvæ by lizards, frogs and spiders; both lizards and frogs would eat hairy larvæ; and even the stings of bees had no deterrent effect upon a lizard.

Mr. Horne said that in India lizards were almost omnivorous, and ate bees with avidity; a friend of his, Colonel Ramsay, had hives of *Apis dorsata* placed near some stone walls or terraces, which were a favourite resort of lizards; they would come to the mouths of the hives, lie in wait for the bees, and take them, sting and all. Larvæ of all sorts, smooth or hairy, dull or bright, were eaten by lizards; but scorpions were rejected; bears, however, would eat scorpions, and he had seen bears turn over stones in search of scorpions, and eat them regardless of their stings. He had noticed that a common Indian species of *Carabus*, and all the blister-beetles, seemed to be free from attacks of any animal.

Dr. Wallace said that the larvæ of *Bombyx Cynthia*, which were both gaily coloured and covered with tubercles, were eaten by cuckoos, robins and tomtits: the two latter made holes in the skin and took out the inside, whilst the cuckoos swallowed the larvæ whole.

Mr. Wallace was pleased to find that the observations of Mr. Weir went so far to support the theory which, reasoning entirely from the analogy of what had been observed in the *Heliconiidæ*, he had ventured to suggest in answer to a question of Mr. Darwin's. He thought there was now a solid foundation of fact for the hypothesis that the bright colour of larvæ was protective, and was (as it were) a flag hung out to warn off their enemies. Doubtless every detail either of form or colour had its object and bearing upon the history of the creature. It was not necessary that the law should be absolute or the rule universal; he did not expect to find, on the contrary he should have been surprised if it had been found, that *all* brightly coloured larvæ were peculiarly protected, or that the bright colour of any particular larva protected it from *all* enemies; if it thereby obtained protection from a single enemy, if it was left

exposed to the attack of but one enemy less than its neighbours, to that extent at least the colour gave it an advantage; the theory of protective warning supplied the reason for, and afforded a rational explanation of, the gay colouring, which in the case of larvæ could not be accounted for by sexual selection.

*March 15, 1869.* — H. W. Bates, Esq., President, in the chair.

Mr. Smith exhibited specimens of *Colletes cunicularia*, a bee new to this country: they had been sent to him by Mr. Nicholas Cooke, by whose son, Mr. Isaac Cooke, they were captured in the Isle of Wight, between Ventnor and Niton, in May, 1867; four males and five females were taken. It is the largest European species of *Colletes*, and is the *C. hirta* of Continental authors, which name, however, must give place to *cunicularia* of Linnæus, the type of which is extant in the Linnean collection.

Mr. Butler exhibited varieties of several butterflies, captured by him in Switzerland, chiefly in the neighbourhood of Chamounix, in July and August, 1868. There were—*Anthocharis Cardamines*, with the black spot on the fore wings very small, the black edging confined to the tip of the wing, and the orange colour extending considerably within the black spot—this seemed to be the normal type of the insect in Switzerland; *Colias Edusa*, remarkable for its large size; *Epinephele Janira*, one specimen very dark, another very light in colour—the former was the common type in Switzerland; *Argynnis Aglaia*, with the hind wings almost entirely black, and the silvery spots on the under side covering the basal and apical parts of the wing; *Melitæa Athalia*, four varieties, varying from almost entirely black to almost entirely fulvous; and *Parnassius Apollo*, with small pale ocelli, the ordinary pink markings being pale yellow. Mr. Butler added that *Leucophasia Sinapis*, the “wood white” as we term it, was common all over Switzerland, not in woods, but in the neighbourhood of water.

Mr. Stainton, who had just returned from Italy, made some remarks on the different habits of the same species in different localities; for instance, at Cannes, Mentone, and other places in the South of Europe, *Pyrameis Atalanta* was the commonest hibernating butterfly. The species was to be

seen everywhere, whilst in this country a hibernated specimen was never seen before April, and rarely before the time when the hawthorn is in blossom.

April 5, 1869.—H. W. Bates, Esq., President, in the chair.

Mr. Bond exhibited *Sciaphila communana*, of Herrich-Schæffer, a moth new to Britain, captured at Wicken Fen, Cambridgeshire; also dried larvæ of *Myelophila cribrella*, *in situ*, within the stems of thistles.

Mr. Smith exhibited several species of humble-bees with their respective parasites or cuckoo-bees. *Bombus subterraneus* varied from yellow to entirely black, and the parasites *Apathus campestris* showed the same variations in colour; the same was true of *Bombus Muscorum*, and its parasite. *Bombus terrestris* was not liable to variation, its parasite *Apathus vestalis* was also constant; the same was true of *Bombus lapidarius* and *Apathus rupestris*, though the parasite in this case had dark wings. *Bombus Pratorum* was the only moss-building species which was infested by a parasite, *Apathus Barbutellus*, and this did not at all resemble the humble-bee. The first idea that suggested itself was that the cuckoo-bee bore resemblance to the worker of the humble-bee in order to gain access to the nest; but it was only in the social species that the parasites resembled the humble-bees, and the parasite of *B. Pratorum* militated against the theory.

In the course of the conversation which ensued, it was suggested that an entry might be effected into the nest of a solitary bee, in the absence of the true owner, without disguise; whilst in the case of a social species, of which some of the colony would always be at home, the entry of an undisguised stranger would be detected. And in reply to inquiries, it was elicited from Mr. Smith that the moss-building *Bombus Pratorum* was a placid bee, by the side of whose nest a person might sit with impunity; and hence it was to be inferred that this species, by reason of its different mental constitution, might more readily admit a stranger into its nest without opposition, whilst stratagem or deception was necessary to obtain access to the nests of species less peaceably disposed.

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*Entomological Notes, Captures, &c.*

*Entomology at Bury St. Edmund's.*—On June 12th I went on an entomological excursion for the afternoon, with four of my pupils and a former pupil. After driving ten miles we set to work, and our united captures were over thirty *Lithostege nivearia* and nearly the same number of *Agrophila sulphuralis*. The latter were all within fifty square yards, and in the finest condition. There were two varieties of *L. nivearia*—one white and powdered, the other with a very distinct subterminal line.—(Rev.) *A. H. Wratishaw*; *School Hall, Bury St. Edmund's*.

*Colias Edusa at Builth.*—On the 8th of this month I captured two very fine specimens of *Colias Edusa* in the railway cutting near Builth, both evidently new insects.—(Rev.) *T. Hirst, of Canterbury*; *June 24, 1869*.

*A new Locality for Eupithecia lariciata.*—A few days ago I had the pleasure of taking a few good specimens of this species amongst larch at Breadsall, near Derby.—*Geo. Baker*; *47, Kedleston Street, Derby, June 16, 1869*.

*Hydrelia unca at Darenth.*—While collecting near Dartford, in Kent, on May 29th, I captured a fine specimen of *Hydrelia unca*.—*C. J. Boden*; *127, Tooley Street, June 16*.

*Spiders in New Granada.*—I went lately into another old mine we are acquiring: it is no joke, either going there or going in when there, crawling under loose-looking rocks, over mud or through it knee-deep, and obliged to look out for bats, which twice put out two out of our three candles; and worse to see where you put your hands on the walls, which are inhabited or patrolled by the most awful spider you can conceive. A crab-shaped one, developing itself into a scorpion,—body an inch and a half broad, legs three inches long, and claw-legs in front two inches,—fairly frightens one to look at, and catching him is past me altogether. A comparatively small one I have secured, and will order a large one. No fear but he will be found, for you are sure to come on the demons. What they live upon puzzles me, unless they catch bats: they are fierce, and one huge one turned on me, when the candle was put near him, and fought. They abound in all our old abandoned levels.—*Henry Birchall*; *Frias Mines, February 17, 1869*.

*Obituary.*

*Death of Mr. Walcott.* — Mr. W. H. L. Walcott was the second son of Mr. John Walcott, of Bath and of Croagh, in the county Limerick, who was the author of several useful works on Ornithology, Botany and Geology, and more particularly of an illustrated Natural History of British Birds: he was born on the 10th of April, 1790, and at the time of his death had reached the mature age of seventy-nine. He inherited from his father a love of Natural History, and, at different periods of his life, devoted much attention to different branches: he first directed his studies to British Conchology, of which he formed a valuable collection; subsequently he commenced the study of Entomology, and first directed his energies to the formation of a collection of British Lepidoptera, but this he did not long continue to do: Coleoptera had greater attractions for him, and of this order he formed a good collection, and was fortunate in discovering several species for the first time in this country. About twenty years ago he commenced the study of the Aculeate Hymenoptera: in this order he was the fortunate discoverer of several of our rarest species of bees; *Andrena ferox*, *A. similis* and *A. picicornis*, although not first discovered by him, were only known to us by one or two examples in the collections of Kirby and Desvignes: these species Mr. Walcott supplied all the collections with, and Mr. Smith possesses two or three undescribed *Andrenidæ* which Mr. Walcott discovered in the neighbourhood of Bristol. For years he was a most ardent and successful collector, and a most liberal distributor of his rarities: his collection is very extensive, as he was most anxious to enrich it with every variety of each species; his collection of *Bombi* is unrivalled in the series of varieties, and in the beauty and perfect preservation of the specimens: as a whole his collection is only less rich in the number of species than that of the British Museum and of Mr. Smith. I learn from his relatives that they have no intention of parting with these treasures, which in all probability will be deposited in the Museum of the Bristol Scientific Institution.—*Edward Newman.*

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# THE ENTOMOLOGIST.

No. 68.]

AUGUST, MDCCCLXIX.

[PRICE 6D.

*Description of the Larva of Dianthæcia capsophila.* — There has been much dispute as to the specific distinctness of *D. capsophila* from *D. carpophaga*, and it has been stoutly maintained by several somewhat eminent entomologists that the former insect is only an Irish form of the English *D. carpophaga*. I have always thought that the only way to settle the question was to procure eggs from true genuine Irish *capsophila*, and to feed up the young larvæ in England on seeds of *Silene inflata*. In the summer of 1867 I happened to be staying in Dublin, and took the opportunity to make an excursion to Howth, where I collected a number of larvæ of *D. capsophila* on *Silene maritima*. They turned to pupæ before I left Ireland. In the summer of 1868 I bred a number of moths, and succeeded in obtaining impregnated eggs. From these the larvæ in due time hatched. I am sorry to say that, owing to my having overlooked a small crevice in the box in which they were, all the larvæ, with one exception, escaped. This I fed up on seeds of *Silene inflata*, and in due time it assumed the pupa state. The perfect insect emerged two days since: it is a true typical *D. capsophila*, just like its native Irish brethren, and not at all resembling the darkest variety of *D. carpophaga* I ever saw. I may observe that here, in Buckinghamshire, all our *D. carpophaga* are singularly pale, so that, so far as local colouring causes go, I might naturally have expected to breed a very pale insect. I have no doubt in my own mind that *D. capsophila* and *D. carpophaga* are totally distinct species. I subjoin a description of the larva of the former insect: it very closely resembles the larva of *D. carpophaga*, but is a stouter insect, and has a peculiar orange tinge which I have not noticed in the caterpillar of the latter species: — Ground colour pale yellowish gray. Back dusky. Central dorsal lines yellowish, bordered with pale brown or olive. Sub-

dorsal and spiracular lines ditto. Spiracles yellowish in a dusky ring. Head dusky. Segmental divisions orange. Whole body tinged (when full-fed) with orange, and sparsely strewed with short darkish hairs. Full-fed in August. — (Rev.) *H. Harpur Crewe; The Rectory, Drayton-Beauchamp, Tring, July 22, 1869.*

*Pupation of Botys verticalis.* — About the middle of June, on opening one of the many rolled-up leaves of the common nettle (*Urtica dioica*), the full-fed larva of *Botys verticalis* is perceived lying snugly ensconced therein. Should the observer be desirous of watching its pupal changes, he will find that, just before the caterpillar is ready to enter the pupal state, the form and colour of the anal segment is clearly visible through the skin; and that as it slowly passes into a chrysalis its head, thorax and wing-sheaths are of a beautiful apple-green colour; the abdominal segments are pale green mottled with white; the dorsal pale green, and visible throughout its entire length; the anal segment of the pupa is of a dull pink colour, and armed at its extremity with a cluster of hooked bristles. After the expiration of an hour or so, the observer will further notice that some of the mottled markings on the abdomen begin to change to a cream-colour: he is then interested in observing that the head and thorax are gradually turning whitish, whilst on the other hand the segmental divisions of the abdomen are green; the creamy coloration situate on certain parts of the abdomen is observed slowly to assume a pale pinkish or flesh tint, particularly noticeable on the 1st, 2nd, 3rd, 4th, 5th, 6th and 7th of those segments, changing gradually into a pale brown tone. After an interval of about a couple of hours, the head and thorax become pale brown: it is then seen that the base of the ventral surface of the 4th, 5th, 6th and 7th abdominal segments have become partly surrounded by a semicircular band composed of dark pigment, and are faintly seen through the posterior portion of the transparent green-coloured wing-cases. On turning the pupa on to its breast, we then observe that the dorsal surface of the above-mentioned segments are not possessed of a semicircular band, but of a dark brown-coloured central mark or blotch: these latter, however, after a time, throw out fresh pigment, and spread themselves right and left until they come in contact with the ventral bands, and,



in so doing, entirely encircle the base of each of the segments 4 to 7, both inclusive, with a dark pigmentary band: by this time the dorsal vessel becomes much more indistinct, on the head and thorax slowly deepening in tint; the wing-sheaths enter upon their coloration, the back parts turning darkish from the shoulder downwards, and in a short time assume a dark brownish tone, the remaining parts of the wings deepening into a dull green tint; the abdominal segments are then perceived to be of a dark tint. In the course of half an hour the eyes, head and thorax have turned dark shining brown, the entire surface of the wing-sheaths assuming a similar colour; the abdominal segments, in order to keep pace with the general economy of the pupa, deepen still further in colour, and then all outward trace of the dorsal vessel is lost, the pupa finally settling down to a very dark shining brown, in many instances approaching almost a black, others becoming quite black. — *Charles Healy; 74, Napier Street, Hoxton, N.*

*Life-history of Fenusa Ulmi*, Newman.—During the month of May the leaves of the common elm (*Ulmus campestris*) are mined by the caterpillars of three distinct orders of insects, viz., Lepidoptera, Coleoptera and Hymenoptera. The Lepidoptera are represented early in the month by the numerous larvæ of a small Microlepidopterous insect (*Coleophora fuscedinella*), whose peculiar mode of feeding soon causes a number of little blotches to appear on the leaves. Later in the month (about the 10th) the larva of a little Coleopteron (*Orchestis Alni*) begins feeding: the new-comer at first makes a narrow mine, afterwards expanding it into a blotch; the latter is situate at the tip or sides of the leaves. At the end or nearly so of the month, the larvæ of the minute Tenthredo whose life-history is under consideration are observed to be feeding inside the leaves, making a little white-brown-coloured blotch. The egg is laid on the under side of the leaf and close to the spot where the small rib branches off from the mid-rib; the parent fly, however, occasionally deposits an egg or two at random on the leaves of *Ulmus campestris*, and at times we may meet with a leaf of this tree containing no fewer than five little larvæ of *Fenusa Ulmi*, the little mines starting out on both sides of the mid-rib: the same circumstance is also observable at times in the leaves of its other

food, the wych elm (*Ulmus montana*). There is only one brood of this caterpillar during the season, and by the end of June they are all under ground and safe within their egg-shaped cocoons; the cocoons themselves are fabricated out of dark brown silk; the cocoon-tenants remain entombed for something like ten and a half months before the perfect insects liberate themselves: the larva whilst feeding lies on its back, displaying to our view the decorative markings on its ventral surface; it has a white body, and is in possession of twenty-two legs, the first six of which are annulated with dark brown; the claws are also dark brown; the head of the little creature is tinged with pale brown of a darker tone at the sides, mouth reddish brown, eye-spots brown, and its dorsal vessel is dull green; the under side of the 2nd segment has a dark oblong-shaped plate down its centre, and on either side of this there are two brownish dots; on running our eyes down the remaining segments we observe that, excepting the anal segment, all are furnished with a small black-coloured dot; the 5th segment has no organs of progression. At the first moult the decorative markings of the larva are all thrown off, and if at that time we closely inspect the under surface of the body we perceive a slight remnant of pigmentary deposit on the segments, situate at the exact spots where the black ventral dots were located previous to the moult: these dusky marks, however, soon fade away, and leave the segments entirely spotless; the head and eyes slowly resume their original colour, and the six thoracic legs regain their annulations: when full-fed it ceases to feed, and lies in its mine in a state of repose, and throws off its skin for the last time; by and bye a faint yellowish tinge spreads itself over the body of the larva. At the appointed time the larva liberates itself from its mine by biting a hole in it. At the last moult the brown-coloured bands on its six anterior organs of locomotion are thrown off entirely. Escaping from its mined abode, the little creature drops to the ground, and now, every time it is touched, it instantly partially curls its body up, remaining in that position only for a moment or two, in fact following a similar course to that pursued by another little *Tenthredo* larva that inhabits the leaves of the oak, a species of larva, by the way, respecting whose economy I have collected some interesting details, but whose

imago has, as yet, baffled all my attempts to rear. The adult larva of *Fenusa Ulmi* never pupises inside the mined leaf, but buries itself in the ground, the imago appearing about the middle of May. The parasite of *F. Ulmi* spins up inside the mined leaf. For the last seven or eight years I have noticed the larva of this *Tenthredo* very abundant in the leaves of *Ulmus campestris* growing at Stratford, Essex; it is also common in the leaves of the same tree in the Addington Road, Croydon, and it is a constant yearly visitor to *Ulmus montana* growing at Shirley, in Surrey. I have also met with it in the leaves of *Ulmus campestris* in the lane leading to Dartford Heath, and it appears to be generally distributed.—*Charles Healy*.

*Life-history of Fenusa pygmæa*, Hartig. — All through the summer and autumn months any one examining the leaves of the common agrimony (*Agrimonia Eupatoria*), particularly those growing nearest to the ground, will in all probability perceive that some of them contain a brown blotch. This discoloration of the leaf is caused by the larva of *Fenusa pygmæa* having devoured all the parenchyma which was formerly situated within the radius of the blotched area: the mine has a dull dotted look, especially so the smaller mined leaves, caused by the circumstance of the creature's leaving its frass and cast-off skins within the mine. On examining the leaves of this plant about the middle of the month of May, some of them attract our attention from the simple fact of their containing one, two, or even three little galleries in them; and at the broadest end of each of the little galleries a minute caterpillar is perceived lying on its back. At that time of the year we shall probably notice that the contained larva is lying perfectly still, preparatory to undergoing its first moult; its three anterior segments are seen to be glossy white, and its green-coloured dorsal vessel shows through the white body. This little *Tenthredo* larva has three pairs of thoracic, seven pairs of abdominal, and two anal legs; there is an entire absence of legs on both the 5th and 13th segments. Shortly after its ecdysis is completed the little creature recommences feeding, and we then observe that it departs from its previous mode of feeding in a narrow mine, and commences blotching the leaf. Its head is pale brown, darker at the sides; its body white; the dorsal vessel green:

as soon as its markings are fully developed, the under side of the 2nd segment becomes possessed of a brown-coloured shield, and the ventral surface of the 3rd, 4th and 5th segments is adorned with a little black dot. By the time that it has fully satisfied its appetite, and has arrived at its adult state, the last ecdysis takes place; its body then becomes whitish yellow; its head is faintly tinted with brown, and its mouth is tipped with dark brown; the centre and anal parts of the dorsal vessel only are visible, and of a dark tone. There is a little *Tenthredo* larva that inhabits the leaves of the buttercup, which also changes to a pale yellow colour when full-fed; it then emits a most pleasant lemon-scent from its body. The full-fed larva of *Fenusa pygmæa* is tolerably active, walking along at a sharp pace: it buries itself in the ground to pass its pupation. The perfect insects are first developed about the end of the month. In June there is another brood of larvæ, which lasts through the months of July and August, from which some imagos are developed in the autumn, the greater number remaining quietly in the ground until the following April before they put in an appearance. The parasite of *F. pygmæa* constructs its cocoon within the blotched leaf.—*Charles Healy.*

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#### *Entomological Notes, Captures, &c.*

*Scarcity of White Butterflies.*—During the whole of the present spring and summer, up to this 12th of July, I have seen but three specimens of the small white butterfly (*Pieris Rapæ*), and not one of the large species (*P. Brassicæ*). This is the more remarkable, as they were so abundant last year as to be a positive nuisance, from the destruction of our cabbages caused by their caterpillars. I should much like to learn from my readers whether a similar observation has been made elsewhere in the neighbourhood of London, or in any part of the country.—*Edward Newman.*

*Early Appearance of Colias Edusa.*—Many specimens of *C. Edusa* have been captured here during the last month, and some of them the finest I ever saw. I noticed one early in the month of June, but did not note the day. I have seen at least half a dozen on the wing and eight or nine captured

ones. The caterpillars of the peacock butterfly are remarkably abundant this year; hundreds of them may be seen together. I have obtained a specimen of *S. ocellatus* this season, being my first specimen in this locality. — *Stephen Clogg; Looe, July 2, 1869.*

*Colias Edusa near Wingham, Kent.* — Driving with an entomological friend near here to-day, we saw a good specimen of this butterfly on the wing over a clover-field. — *William Thomson; Adelaide Road, Penge, June 25, 1869.*

*Lycæna Arion, &c., in Devon: Melitæa Cinxia in Dorset, &c.* — When I last had the pleasure of seeing you, I think you told me that you were not aware that the Bold Head, on the coast of Devon, was a locality for the large blue butterfly (*Lycæna Arion*). Two years since, when with some friends, we caught several dozen of that species, and about a fortnight since many were again taken in that locality by friends of mine. When at Lyme Regis, in Dorset, and adjoining the coast of Devon, I saw several collections of Lepidoptera in which were specimens of *Melitæa Cinxia*, said to have been taken in the neighbourhood. Now, as that seems to be a locality not mentioned in entomological works for that insect, I will, if you wish, get further information concerning it. The chalk-hill blue, *Corydon*, is also taken at Lyme, and I should say also on the coast of Devon, which is close adjoining. At Ivybridge, near Plymouth, I took *V. Polychloros* at the end of June last, — a species very uncommon in Devon. The marbled white I have found along the coast from Lyme, in Dorset, to Sidmouth on the coast of Devon. I need scarcely say that I shall be most happy to give you any information concerning the butterflies of Devon that lies in my power. *Thecla Betulæ* is rather rare in this neighbourhood, but I have beaten many larvæ from the sloe-bushes near Plymouth. The variety *Bryoniæ* of *P. Napi* was taken by a friend of mine near Plymouth some years since. — *J. Gatcombe; 8, Lower Durnford Street, Plymouth, Devon, July 14, 1869.*

*Eggs of Polyommatus Arion.* — One of the many “problems” which Mr. Stainton was formerly in the habit of pressing upon us seems likely to meet with a solution shortly, namely, the life-history of our largest blue, *P. Arion*. The old locality for this rare species was Barnwell Wold, Northamptonshire;

but I have not heard of any captures in that locality for many years. About ten years ago I found the species very sparingly distributed on parts of the Cotswold Hills, a few miles from Gloucester and Cheltenham, and captures have been since then occasionally recorded; subsequently it has been taken at about fifteen miles distance. Some years ago I received several specimens which were taken about six miles from Kingsbridge, Devon; and there is no doubt the species would be met with, if looked for at the right season, in several other localities; but these localities are generally of the most uninviting description—bleak, elevated ground, broken up by deserted quarries, thinly clothed with vegetation, among which the wild thyme is the most conspicuous. These are the places, “far from the haunts of men,” where *P. Arion* loves to gambol, and with its fragrant food-plant to “waste its sweetness in the desert air,” with now and then an escort in the shape of *P. Alexis*, *Alsus*, or *Agestis*. Last summer the locality I had previously worked yielded the insect in more abundance than usual; and although I tried to obtain eggs from captured pairs, I did not succeed. This year I, as well as some others, have been more fortunate. Curiously enough, although some two or three dozen were taken here last summer, the species has turned up this year much more abundant than ever. This flush of specimens has enabled us to be more prodigal in imprisoning likely-looking females, with a view to their oviposition. Mr. Marsden sent some, with the native thyme, to Mr. Buckler; and in a few days we received the welcome intelligence that a few eggs had been laid on the blossoms. I am glad to say that I also have succeeded in obtaining a fair number of eggs, and Mr. Marsden has also got some. They are laid on the corolla, generally at the base, often on faded flowers. Is this any indication that the larvæ feed on the seeds? They are of a beautiful bird’s-egg-green colour. When they hatch, whether they hibernate, and other details of their history, will now probably be duly forthcoming, if we are fortunate enough to rear the species, which seems to have been as much overlooked by continental as by English entomologists. The recent publication of the fact that Professor Zeller saw a female *Arion* deposit her eggs on the blossoms of the wild thyme, gave us the key as to what attraction to offer to the

females we might find in "an interesting condition;" and we may now hope to succeed in unravelling the mystery which obscures the early life of this peculiar species. — *Joseph Merrin ; Gloucester, June 25, 1869.*

*Stauropus Fagi in Richmond Park.*—It may interest some of your readers to hear that I yesterday evening took a fine female specimen of *Stauropus Fagi*, while at rest on the palings in Richmond Park. I am surprised to find this rarity so near London. I intend keeping the moth for three or four days, in hope of obtaining eggs.—*J. A. Edwards ; 4, Chandos Street, West Strand, W.C., July 7, 1869.*

*Noctuas on Stinging Nettles.*—The Rev. J. Greene, in his 'Insect Hunter's Companion,' observes that on certain nights, and in favourable localities, the green leaves of stinging nettles are found to be peopled with moths; he adds that he could not imagine what attraction possibly exists for them. During the last few weeks I have searched the nettles in our neighbourhood with a lantern on every mild evening, and can fully corroborate his statement as to the presence of the moths, but I believe I have also been fortunate enough to discover the attraction. Nettles, as well as other plants, are subject to the attack of Aphides; indeed it is very difficult to find a nettle-leaf whose under side is not covered with them. It is well known that Aphides excrete a sweet limpid liquid, which sometimes accumulates in sufficient quantity to drop on to the leaves below, producing a glazed appearance and a coating of a sticky substance known as "honey-dew." It is to imbibe this liquid, of which ants are so fond, that the moths assemble. This I believe to be a rational explanation of the fact, since I found moths on the sticky leaves only, and indeed could see them shifting their trunks from one part of the leaf to another as they sucked up the "dew." Where the liquid had been formed in sufficient quantity to collect into a drop at the end of the leaf, there would be two or three insects busily sipping the nectar. I may add that I have seen moths on other Aphis-infested plants, red and black currant-bushes, &c. We thus see that, ages before we had concocted our "rum and sugar" wherewith to paint the tree-trunks, Nature had spread her feast for the Noctuas. Hitherto I have not taken any rarities in such situations. — *R. Meldola ; Park Place, Leyton.*

*Dianthœcia Echii* at Tuddenham. — I have been at my old haunts at Tuddenham, and spent four days at the 'Anchor' there, entomologizing. I have got *Dianthœcia Echii* again—a large female, taken on June 28th: it was beaten out of a bank alongside a path of rye.—(Rev). A.H. *Wratislaw*; *School Hall, Bury St. Edmund's, June 20.*

*Scent of Nematus Saliceti.* — My valued correspondent Mr. Müller mentions a character in the full-fed larva of this sawfly. He writes thus: — "I handled sundry specimens of this larva before they were full-fed, and noticed no particular odour; but when I happened to take up with my finger a full-fed larva which I had watched tumbling down, I immediately dropped it in disgust, as a most unpleasant odour, similar to that of *Acanthia lectularia* [the bed-bug] struck my olfactory nerves." No sooner have the larvæ spun themselves cocoons than the offensive odour is lost. On this Mr. Müller thus philosophizes:—"I am tempted to conclude that this odour is given to them as a safeguard during that short but most critical moment of their lives, when neither the shell of the gall nor mother earth can protect them against their enemies." Here we have the "grain of wheat" in the observation recorded, and no one will quarrel with the accompaniment of a little "chaff." (See *Ent. Mo. Mag.*, July, 1869).—*E. Newman.*

*Fireflies in Kent.* — The enclosed specimens of *Lampyrus italica*, or firefly, which, we are commonly assured, is only to be seen in the South of Europe, was caught in my garden last night about 9 o'clock. A young barbarian, home for the holidays, dealt a fatal stroke at its brilliant life before I had time to plead for mercy; but its soft yellow light, so familiar to those who dwell in warmer latitudes, and so different from the cold blue gleam emitted by an English glowworm, still lingered in the last segment of its abdomen, when, three hours later, I retired to rest.—*Ashford, Kent.*—'*Times*' *Newspaper, July 16.*

*Fireflies in Surrey.* — The enclosed specimen is one of many that have every evening for the past week, attracted by the lights, flown into my dining-room. Having been in the tropics, I recognized my beautiful visitors, which had been so numerous that they were denounced as nuisances.—*Caterham, July 17.*—*Id.*



[What do these paragraphs mean? The truly English-boy propensity of killing gives a *vraisemblance* to the first story (for every English boy, until humanized by Entomology, kills or hurts whatever he can); but what is the firefly of the tropics found at Caterham? Can any of my correspondents throw light on this? even the glimmer of a glow-worm would be acceptable.—*E. Newman.*]

*Varieties of Zygæna Filipendulæ and Luperina testacea.*—I have bred an orange variety of *Z. Filipendulæ*, and another having one under wing orange and the other red: are these unusual? I also took at sugar a black variety of *L. testacea* in beautiful condition.—*W. Jagger; St. Ives, Hunts, July 20, 1869.*

*Hadena assimilis in Inverness-shire.*—On the 30th of June last I took a specimen of the above moth, on the 10th instant another, and on the 11th instant a third, all at sugar, in Inverness-shire.—*Nicholas Cooke; Spring View, Liscard, July 16, 1869.*

*Oxyptilus Britanniodactylus, a new Plume.*—At a meeting of the Northern Entomological Society, held on the 22nd of May, Mr. Gregson exhibited carefully-executed drawings of the larva and imago of many species of Pterophorina, made by himself from living specimens, including drawings, in all its stages, of a new plume, discovered by him in the larval state in Wales, hybernating on *Teucrium Scorodonia*, in March, when he was searching for hybernating larvæ of *P. osteodactylus*, where the golden rod grows amongst the wood sage; and he read the following description of the new species of plume, under the name of *Oxyptilus Britanniodactylus alar*:—Expanse six to seven lines; antennæ annulated with brown and gray; head and thorax rich fuscous-brown; abdomen bronze-brown, with raised light scales on each segment; anterior wings rather broad, fuscous-brown, divided into five equal parts by four oblique markings—the first part formed by a dark mark on the first third of the costa, and a light mark on the inner margin; the next by a light mark on the middle having a cuneiform dark dash inside, and a dark dot or blotch on the inner-margin cilia having a light edge; the third by a light silvery oblique striga across the wing, terminating in front of the second dot on the inner cilia; and the last by a silvery streak on the

first plume, well pronounced along the costa towards the apex, having an ochrey inside, and appearing obliquely across the second plume; on this plume there is a bright silvery hook-like mark at the lower angle; posterior wings—two upper plumes dull fuscous-brown; the third plume lighter silvery, terminating with a dark blotch, and the extreme point light with a dark dot. The eggs are hatched in autumn, and the larvæ eat small round holes in the upper leaves of *Teucrium Scorodonia* growing in sheltered places. They appear in winter as small oval tufts of whitish hair, attached to the under side of the leaves. Early in spring they move, and eat into the young shoots of the food-plant, and in a few days afterwards, if the season is fine, they may be seen on the upper side of the young leaves casting their skins, and then they appear like oblong pinkish bundles of hair. They now begin to eat freely, previous to the next change, and may be easily found, often two or three, sometimes more, upon each spike of their food-plant, always on the upper side of the terminal leaves. In a few days they move down the stem, and eat a small round hole into the stem, about two joints down, which soon causes the tips of the plant to droop, and near this cover they remain for some weeks, eating the young growing leaves around them, until they appear as stout whitish green hairy larvæ, with a retractile head, attenuate to the anus, four to five lines long; and change in May and June to a pinkish and green, eventually brown pupa, hanging by the tail upon anything near, appearing as imago in June and July. The species flies freely in sheltered places, when the sun shines, from 4 p.m. to 7 p.m., on mild evenings. That this species has remained in our collections as *P. Hieracii* so long, is perhaps only in consequence of our want of good specimens to work with; but that it differs from *O. Hieracii* of continental authors Mr. Gregson was quite satisfied. It was taken freely at Pettypool Wood, many years ago, by N. Cooke and others; since then he had met with it in Wales, in Ireland, in the Isle of Man, and in company with Mr. Hodgkinson in Westmoreland, and at Humphrey Head, in North Lancashire. He had therefore called it *Oxyptilus Britanniodactylus*.—*Kindly communicated by Mr. C. S. Gregson.*

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## *Contributions to a Synopsis of British Coleoptera.*

By G. R. CROTCH, Esq.

THE following paper is an extract from a Monograph of *Balaninus* and *Anthonomus* in the 'Annales de la Société Entomologique de France,' 1868, by M. Desbrochers de Loges. My series was submitted to him at the time, and hence may be considered to represent his views with correctness.

### BALANINUS.

Group 1.—Large species, clothed with paler scales; antennæ with the joints slender, elongate; club acuminate.

#### A. Posterior femora with a strong tooth.

1. *B. Glandium*, *Marsh* (venosus, *Germ.*) Black, densely clothed with ferruginous scales, the elytra with darker spots; legs thick and strong; elytra separately rounded at the apex; scutellum narrow: length 3—4½ lines. Common on oaks, &c.

2. *B. tessellatus*, *Fourc.* (turbatus, *Gyll.*) Black, densely clothed with ferruginous scales; rostrum very elongate in the female and much curved; antennæ pubescent, with the joints of the funiculus elongate: length 3—3½ lines. Rare.

3. *B. Nucum*, *L.* Very like the preceding, but with the rostrum less curved and the antennæ very pilose, the latter joints of the funiculus being subnodose: length 3—5 lines. Common everywhere.

(To this group belongs the hitherto unidentified *B. pelitus*, *Schh.*, very like *B. Glandium*, but the femora have a subtriangular tooth, not unciform as in the latter, and the rostrum is hardly incrassate at the base.)

#### B. Posterior femora with a minute tooth.

4. *B. villosus*, *Fab.* Black, beneath cinereous; elytra with a posterior fascia, and the scutellum cinereous: length 2½—4 lines. Common.

5. *B. Cerasorum*, *Herbst*. Ferruginous, beneath paler; elytra variegated with paler spots: length 2—3 lines. This species reproduces the coloration of *B. Nucum*.

c. Femora with no tooth.

6. *B. rubidus*, *Gyll*. Not unlike the preceding, but more uniform in colour, and with the thorax and under surface more or less black; the rostrum nearly alike in both sexes, &c.: length 2—2½ lines. Commoner than the preceding, with which it is often confounded.

Group II.—Small black species, with the pygidium nearly covered.

7. *B. Crux*, *Fab*.—Black; elytra with a white cross: length 1 line. One specimen in Leach's collection, with a label in his own writing.

8. *B. Brassicæ*, *Fab*. Black; scutellum and body beneath white; elytra with a fine gray pubescence; antennæ brown: length 1½—2 lines. Common.

9. *B. pyrrhoceras*, *Marsh*. Exactly like the preceding, but the rostrum is nearly alike in both sexes, and the antennæ are entirely pale, except the club: length 1—1¾ line. Less common than the preceding.

#### ANTHONOMUS.

Group I.—Elytra with paler fasciæ and markings.

A. Anterior femora with a large triangular tooth.

1. *A. Ulmi*, *DeG*. Ferruginous; rostrum elongate, subopaque; elytra punctate-striate, with the punctures subquadrate, and with a posterior transverse whitish fascia: length 2—2½ lines.

2. *A. Chevrolatii*, *Desb*. Like the preceding in coloration, but at once distinguished by its very convex thorax and the smooth interstices of the elytra: length 1½—2 lines. Rare: taken formerly by Mr. E. W. Janson near London.

3. *A. rufus*, *Schh*. Again very like *A. Ulmi* in coloration, but to be recognized by the shining very cylindrical rostrum; the interstices of the elytra are smooth and shining: length 1½—2 lines. Recorded as British by M. Desbrochers de Loges.

(A fourth species, *A. Pyri*, *Schh*., is much darker than the preceding, with a very long rostrum, and the elytra are bituberculate at the base.)

4. *A. Pomorum*, *L.* Piceous, elongate-ovate; elytra with an oblique whitish fascia; scutellum whitish; rostrum elongate, curved: length  $1\frac{1}{2}$ — $2\frac{1}{2}$  lines.

(*A. incurvus*, *Panz.*, is also given as English by M. Desbrochers de Loges, but probably erroneously. It is very like *A. Pomorum*, but is shorter, more convex, less parallel, and the legs are much less stout and paler in colour.)

B. Anterior femora with a moderately visible tooth.

5. *A. pedicularius*, *L.* Varying from ferruginous to piceous, with a short thick very opaque rostrum; elytra with two transverse white bands, variable in extent and colour, but generally well defined: length  $1\frac{1}{2}$ — $2\frac{1}{2}$  lines. Common.

6. *A. conspersus*, *Desb.* Extremely close to the preceding, but constantly smaller, darker and narrower; the elytra are more uniformly clothed with pubescence which does not form bands, and the whole structure is more slender: length  $1\frac{1}{2}$  line. Taken by Dr. Sharp in Dumfriesshire, on *Sorbus*.

(*A. distinguendus*, *Desb.*, from the North of France, is extremely close to both the above, but is shorter and slightly ventricose; the elytra are bifasciate, and the femora less dentate than in *A. pedicularius*.)

c. Anterior femora with a very small spiniform tooth.

(The only species of this group, *A. Sorbi*, has not yet occurred in England: it is nearly black, with the elytra ferruginous, with two pale fasciæ.)

#### Group II.—Elytra unicolorous.

7. *A. varians*, *Payk.* (*pubescens*, *Wat. Cat.*). Entirely red, except the head and rostrum, which is shining: length 2 lines. Rannoch and other parts of Scotland, on pines. This is the only form found here as yet: it varies in Sweden to the point of becoming quite black.

8. *A. britannus*, *Desb.* (*pubescens*, *Walt.*) Entirely red, concolorous; rostrum opaque, short; anterior femora very minutely dentate: length  $1\frac{1}{2}$  line. Described from three specimens taken by Mr. Smith, one of which, through the great liberality of that gentleman, is now in my collection.

(The true *A. pubescens*, *Payk.*, is larger, has a very elongate slightly shining rostrum; the whole form is more elongate, the legs are thicker, and the posterior tibiæ are not arcuate in the male.)

9. *A. Rubi*, *Herbst*. Black, sparingly clothed with a gray pubescence; rostrum elongate, opaque; femora with a very minute tooth: length 1—2 lines. Extremely variable in size, and generally distributed. A permanently small form of this species occurs in various parts of the kingdom, especially in Scotland, but always in marshy boggy places, with *Comarum palustre*, and in localities where the type-form never occurs. I fail to see any difference between them, except in the size and the colour of the elytra, which is generally rufo-piceous, but it may be distinguished as var. ? *Comari*.

G. R. CROTCH.

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*Description of the Larva of Lobophora hexapterata.*—The head is prone, of very nearly the same width as the 2nd segment; it is slightly notched on the crown, and the cheeks are slightly swollen; the body is almost uniformly cylindrical and rather obese, the divisions of the segments distinctly marked, and each segment, in addition, is transversely wrinkled; the 13th terminates in two acutely conical approximate points directed backwards. The colour of the head is pale apple-green, with black ocelli and pitchy mandibles; the body is pale apple-green, with an indistinctly defined and rather slender medio-dorsal stripe of a rather darker hue; this stripe is due to the presence of food in the alimentary canal; and on each side of it is a paler stripe, equally indistinct, and approaching to glaucous-white in colour: the legs are concolorous with the body, and tipped with three or four strong brown spines, and the claspers are of the same colour, and tipped with a series of shorter spines of the same brown colour as those of the legs: the ventral and dorsal surfaces are almost concolorous: it feeds on *Populus tremula* (aspen), and is full-fed at the end of July. I am indebted to Mr. Porritt, of Huddersfield, for a supply of these larvæ, sent me purposely for description. — *Edward Newman*.

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*Entomological Notes, Captures, &c.*

*A Visit to the Isle of Man.*—I have again had the pleasure of visiting the Isle of Man in company with Mr. Hutchinson, of Leominster. The following Lepidoptera were taken; I omit species of universal occurrence:—*Sesia Philanthiformis* (the perfect insect frequents the flowers of *Calluna vulgaris*; the flowers of *Statice Armeria*—the food-plant of the larva—appear to have no attractions for the moth: they emerge from the pupa between 8 and 9 a.m.), *Setina Irrorella*, *Lithosia complana*, *Orgyia fascelina*, *Gnophos obscurata*, *Pseudopterpna cytisaria*, *Acidalia promutata*, *Abraxas Ulmata*, *Eupithecia pulchellata*, *E. venosata*, *E. fraxinata*, *E. constrictata*, *E. exiguata*, *E. satyrata*, *E. castigata*, *E. subnotata*, *E. pumilata*, *E. vulgata*, *Ypsipetes impluviata*, *Melanthia albicillata*, *Apamea unanimis*, *Mamestra anceps*, *Triphæna subsequa* (one specimen), *Hecatera serena*, *Dianthæcia cæsia*, *D. capsophila*, *Abrostola Urticæ*, *A. triplasia*, *Plusia pulchrina*, *Phytometra ænea*, *Phycis subornatella*, *Chilo mucronellus*, *Melia sociella*, *Crambus falsellus*, *C. inquinatellus*. *Cymatophora Or*, *Agrotis lucernea*, *Aporophyla australis*, *Epione apiciaria*, have also occurred this year, but we did not meet with them. As only a very small part of the island has been explored by collectors, and none of it thoroughly, it would be premature to offer a list of species occurring there, but grounds already exist for believing the Lepidoptera of the Isle of Man are by no means so few in number as has been supposed: its central position possibly to some extent compensates for its limited area, and, considering its climate—milder and more equable I believe than any other part of the British Islands (the mean winter temperature is said to be 5° higher than at Naples),—I think a number of what are usually considered southern species will probably be found to occur, of which *Philanthiformis*, *Nigro-cincta* and *Australis* (all three until lately only known as British from specimens captured on the Devonshire coast) may be looked upon as the vanguard. Coming from Yorkshire, in the same parallel of latitude, six hours seem to transplant the traveller into a different region of the globe; shrubs such as the myrtle, the Fuchsia, the Magnolia and the Arbutus, which in the North of England rarely survive a winter in the open air, here fear

no frost and become great trees. I have seen a plant of the lemon-scented Verbena, hardly known in Yorkshire out of the conservatory, twenty feet in height, with a stem as thick as a man's leg, and *Hypericum Androsæmum* ten feet high and the stem three inches in diameter. *Hypericum calycinum* (the rose of Sharon) also grows luxuriantly in sheltered spots on the cliffs, and it is worth the cost of a visit to the island to see this glorious flower at home. Among ferns *Asplenium maritimum* is abundant: I also noticed *Osmunda regalis* and *Adiantum Capillus-Veneris* sparingly, and in the early summer the sandy slopes are gay with the lovely blue flowers of the somewhat local *Scilla verna*.—*Edwin Birchall, jun.*; *Newlay, August 12, 1869.*

*Dianthœcia carpophaga* and *D. capsophila*.—All will agree in admiring the skill and patience with which Mr. Crewe has sought to solve the question of the identity or otherwise of the above-named insects (*Entom.* iv. 295); but I venture to think his experiment, however interesting, does not justify the conclusion he seeks to educe from it. All that can fairly be said to be proved is that the difference between *Carpophaga* and *Capsophila*, whatever its nature or extent, is too great or too deeply seated to be eradicated in one generation by the change of conditions to which the insect has been subjected; and I think it might naturally be expected that the tendency to inherit parental characteristics would overpower the effects of a mere change of food from *Silene maritima* to *S. inflata*. In considering the matter it should also be remembered that both Scotch and Irish Lepidoptera, from some unknown cause, are very generally darker in colour than their English congeners: the difference in colour between an English and a Scotch *Aplecta occulta* is as great as between *Capsophila* and some of the darker types of *Carpophaga*; but I know by experience that the eggs of a Scotch *Occulta* produce imagos as dark as the parent, although the larvæ may have fed on English dandelions. It seems to me that the much-vexed questions, What is a species? and is a permanent variety an incipient species? are really involved in the point under discussion. If Mr. Crewe's experiment is to be held conclusive, what are we to say of the so-called varieties of the human race? It would seem to follow that if the child of negro parents, born in



England and reared on the ordinary food of English children, should at maturity, in spite of the change of food and climate, still present the characteristics of the black race, we must conclude that the negro and the white man are distinct species and not merely varieties. Now, adhering as I do to the old-fashioned belief that God "hath made of one blood all nations of men for to dwell on all the face of the earth," and considering the undeniable facts of human variation, I know not how a belief in the unity of our race is to be reasonably maintained without the admission that species are almost infinitely variable; and there is an end of all science in the matter if we permit ourselves to consider as indicating "varieties" only, in the human race, differences of colour and structure both large and persistently transmitted, and when the same or even a much less amount of variation occurs amongst the lower animals to claim for it specific rank. White men may not have sprung from black, or *vice versa*; *Carpophaga* may not have produced *Capsophila*: there is no probability that these varieties or species are, under any circumstances, convertible the one into the other; more likely in both cases the existing forms have sprung from some more ancient type of a less specialized character.—*Edwin Birchall; August 4, 1869.*

*Scarcity of White Butterflies in Derbyshire.*—I have read your note anent the scarcity of butterflies. I can confirm it as regards this place. They never abound here, but this year they have almost disappeared. Until this week I do not think I have seen twenty of all kinds. In the spring two or three hybernated *Atalanta* and *Rhamni*, a few whites, and still fewer tortoise-shells and orange-tips appeared; then for some weeks there was literally not one to be seen; this week they have reappeared, but not abundantly. Last year I picked up, without any trouble, about sixty larvæ of *A. Cardamines* in the garden, upon the pods of the single rocket; this year I only saw four of the butterflies at large, and of course the larvæ are absent.—(Rev.) *Hugh A. Stowell; Breadsall Rectory, Derby.*

*Scarcity of White Butterflies in the New Forest.*—Seeing a notice by Mr. Newman respecting the scarcity of our common whites this season near London, I thought it might possibly interest some readers to know that I have found them

equally rare in the New Forest: till last week scarcely a dozen specimens of *Napi* or *Brassicæ* have I seen here, and *Rapæ* has been still scarcer; lately, however, the latter has put in a better appearance. I have also noticed that the specimens of *Napi* and *Rapæ* are much below the average size: I captured the specimens for inspection, and found a similar feature in *A. Cardamines*, which was also very scarce and remarkably small. On the whole I find it a decidedly bad season for *Lepidoptera*, also for insects in general. *A. Paphia* seems the commonest insect out now, and it certainly sits by dozens on all the brambles round here.—*H. Ramsay Cox; Lyndhurst, August 3, 1869.*

*Scarcity of White Butterflies at Newport, Mon.*—I see that *P. Rapæ* and *P. Brassicæ* have been very scarce in London this spring and summer. I only saw two *Rapæ* up to the 10th of July, and either one *Brassicæ* or a hibernated *G. Rhamni*—which I could not say, it being too far off. I see *Rapæ* is plentiful enough now in clover-fields, but I have only seen two or three *Brassicæ*: last season there were thousands here. I have not seen *C. Edusa* yet this season, but in 1867, on the 19th of June, a friend and I caught five. I have found most insects greatly behind this year.—*G. Lock; Turkish Baths, Dock Street, Newport, Mon., August 2.*

*Scarcity of White Butterflies in Gloucestershire.*—I have observed the scarcity of white butterflies this season. Only a very few of *Rapæ* have been seen here, compared to the large numbers which appeared last season. I do not recollect having seen one specimen of *Brassicæ* this summer.—*C. J. Watkins; Painswick.*

*Scarcity of White Butterflies, &c., near London.*—Both the common whites, *Brassicæ* and *Rapæ*, have been “conspicuous by their absence” wherever I have been this season in the vicinity of London in the south and west, and also near Gravesend, in Kent. The first on the wing is usually *Rapæ*, but I did not see one throughout April. I have not the date, but think it was near the end of May before they appeared about my garden here; nor did I see any about Fulham, Acton, Hammersmith, &c., which I occasionally visit. In May (about the middle of the month) there were a few near Greenhithe, mostly haunting the woods, which was singular. I have not yet seen larvæ of this species this season. The

disappearance of Brassicæ was very remarkable, for few occurrences in insect life are more regular than the emergence of this butterfly's pupa during May or at the end of April. They came not, however, this season, though the larvæ were plentiful in the autumn preceding, and were feeding until quite late in October on the Nasturtium in my garden, some being very young then, others nearly adult. The latter went into pupa; the former, I suspect, died off in November, at the coming in of cold weather, though some observer (Jenyns, I think) states that some larvæ of this species hibernate. Unquestionably this is a bad butterfly year, speaking generally. *A. Cardamines* I have not seen at all in the suburban districts about here. The first brood of *C. Pamphilus*, usually out early in May, on Wimbledon Common was quite three weeks behind time. *H. Janira*, mostly on the wing there by June 1st, was only represented by a few stragglers towards the end of the month. *H. Tithonus* was later also, but very abundant. *P. Alexis* has been very scarce, so far as I have noticed. All this is doubtless attributable to the double effects of excessive drought last summer in destroying many young larvæ, and the heavy rainfall during the winter months, likewise prejudicial in a measure.—*J. R. S. Clifford*; 59, *Robert Street, Chelsea, August 7, 1869.*

[These records, elicited by my note, seem to establish the fact that the scarcity of white butterflies this year has been as general as it has been unusual. Many similar records have been received, but want of space compels their omission. *E. Newman.*]

*Occurrence of White Butterflies at Truro.*—I have just read your paragraph in the 'Entomologist' on the scarcity of white butterflies, and beg to inform you that here *P. Rapæ* abounds. After reading it I went out into the garden, and was met at the door by a *P. Brassicæ*, though I cannot recollect having seen another this season, but I have not been on the look out for them.—*Arthur P. Nix*; *Truro, August 1.*

*Cidaria reticulata*, *W. V., at Windermere.*—On July 28th I beat a female of this species out of mixed underwood near where I had taken the species before, in a wood on the banks of Windermere Lake, opposite the town of Bowness. *Emmelesia tæniata* and *Larentia olivata* were fine, and not scarce in the woods around Earthwaite Lake on the 27th, but were

wasted at Birthwaite Wood and in the woods on the Lancashire side of Windermere Lake on the 26th of this month.—*C. S. Gregson; July 30, 1869.*

*Crymodes exulis in Scotland.*—A correspondent informs me that Dr. White has taken this insect in Scotland. The number of specimens and the locality not given.—*E. N.*

*Phylloxera coccinea, an Insect infesting the Oak.*—I have observed the oak-leaves about Leominster this year to be infested and greatly disfigured by a minute winged insect, which I had not noticed until the present year. Having sent to Mr. Walker a supply of the eggs, larvæ, pupæ and perfect insects, he has, with his usual courtesy, handed me the following note:—“The insect in question is *Phylloxera coccinea* (see *Zool. S.S.* 1333). I have observed it for many years in Middlesex and Essex, but am not aware that any one else has noticed it in England. I do not think it is so exhausting to the leaves as the oak-spangles, which are much more numerous and more general. It occurs here and there near London, but rarely in great abundance. The leaves infested by it have spots like those caused by the oak-spangles. In August and in September it may be seen sitting in the centre of a cluster of eggs, which are arranged transversely in four concentric circles, and the outer circle is composed of about forty eggs. The second generation is soon hatched, and at the end of autumn the insect passes away from the withering leaves without any indication of the continuance of its existence during the winter. The oviposition and the hatching of the eggs continue through August. I have not observed the winged female laying eggs. The winged form appears in August. The eggs are devoured by a little white larva, perhaps that of an *Agromyza*? and by another little larva which has a black head and short legs, and is half a line in length. Sometimes a large *Syrphus*-larva consumes all the eggs round the mother *Phylloxera*. A fourth kind of larva occurs with the *Phylloxera*, but I have not observed it to attack them: it is more active than the others, and has somewhat the appearance of a *Dorthisia* or of a *Coccus*, being covered with white laminæ which extend beyond it on each side. Fonscolombe mentions that the *Phylloxera* is devoured by a larva covered with white down, and is that of a *Scymnus* (*Coccinella pygmæa*? *Oliv.*)” —*Id.*

# THE ENTOMOLOGIST.

No. 70.]

OCTOBER, MDCCCLXIX.

[PRICE 6D.

*Description of the Larva of Acronycta Myricæ.*— It rolls in a ring on being touched, and remains in that position for a minute or more. The head is glabrous, slightly narrower than the 2nd segment, and not perceptibly notched on the crown: the division of the body into segments is clearly marked, and the segments themselves are very slightly wrinkled transversely; each segment has also a transverse series of ten warts, and each wart emits a radiating fascicle of stiff bristles; these warts form longitudinal as well as transverse series, and the two series nearest the middle of the back are considerably larger than the rest, and are rendered more conspicuous by their paler colour. The colour of the head is black, with a Y-shaped white mark on the face, the stem of the Y pointing towards the back and separating the two lobes of the head; there is a transverse gray line on the labrum, and the basal joint of the antennal papillæ is also gray: the body is intensely velvet-black, the warts generally slightly paler, and the two dorsal series of larger warts gray; immediately behind the head is a narrow transverse red line, and on each side, passing through the fourth longitudinal series of warts, is an interrupted and most indistinct series of amorphous red spots; the legs and claspers are black; the bristles are either gray or black, the latter predominating. I am indebted to Mr. Eedle for a specimen of this larva, found on the moors near Rannoch during the past summer: he is unable to say exactly the plant on which it feeds in a state of nature, but in confinement I found it eat lilac and willows very freely. It was full-fed on the 24th of August.—*Edward Newman.*

*Description of the Larva of Acronycta Menyanthidis.*— It rolls in a ring when touched, and remains in that position a minute or more. The head is glabrous, slightly narrower than the 2nd segment, and not perceptibly notched on the

crown: the division of the body into segments is clearly marked; the segments themselves are very slightly wrinkled transversely; each segment has also a transverse series of ten warts; on each side are five, three of which are above and two below the spiracles; each of these warts emits a radiating fascicle of stiff bristles. The colour of the head is black, the basal joint of the antennal papillæ being very pale gray: the colour of the body is velvet-black, and the warts concolorous; the spiracles are white and very conspicuous, and immediately below them is a bright red side-stripe interrupted at each interstice of the segments and again below each spiracle; it might perhaps be described more exactly as a lateral series of somewhat crescentic red spots; the bristles are black or brown, some of each colour, but the latter predominating; the legs and claspers are black. I am indebted to Mr. Eedle for a supply of this larva, which he found in some plenty at Rannoch: it feeds freely on willow in confinement, and on the 1st of September my specimens spun loose silken cocoons among the leaves.—*E. Newman.*

*Larvæ of Acronycta Myricæ and A. Menyanthidis.*—I incline to think that both of these, in a state of nature, feed on the dwarf willows which always abound in the subalpine regions where the moths have been found: the names of the sweet gale and bogbean, which have been applied to them, rather indicate the botanical character of the locality than the exact food-plant. The structure of both larvæ is almost precisely similar to that of those of *Arctia Menthastri* and *A. lubricipeda*, but I offer no opinion as to the desirability of approximating these two distant genera.—*Id.*

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*Entomological Notes, Captures, &c.*

*Concerning phytophagous Hymenoptera whose Larvæ are concealed.*—The two great groups of sawflies whose larvæ consume the parenchyma of leaves, leaving both the cuticles intact, may be distinguished by another economic character which I find combined with a structural difference in the fore wings. The divisions I will call *Druidæ* and *Euuræ*, by no means insisting on these names, but employing them under the impression that my names *Druida* and *Euura* were

the earliest by which they were designated. It may, I think, be fairly assumed the law of priority will obtain in these, as in all other instances, when the subject shall be better understood and the synonymy carefully worked out. The economic difference between the groups is that the druids seem to emit no juices deleterious to plants on which they feed, but simply separate the two cuticles from each other, consuming the parenchyma contained between them. A few only of the perfect insects have been obtained, and these appear to have two marginal cells in the fore wings. The euures, on the contrary, emit some fluid, or exercise some power still to be determined, which causes substantial galls distinctly to mark their presence: the fore wings of the perfect insects, so far as hitherto known, have but a single marginal cell. It is probable that every species of tree throughout the world supports at least one of each family, although less than thirty druids and less than a hundred euures at present figure in our scientific lists. In the United States the inquiry has been almost exclusively confined to the willow, and the crop of species that has been reaped is really marvellous. In Britain, alas! we have ascertained but two, *Euura Cynips* and *E. Gallæ*, both described by myself more than thirty years ago. *Euura Cynips* produces the familiar gall to be found almost everywhere on the leaves of the crack willow (*Salix fragilis*): this gall is of an oblong form, and protrudes equally from both surfaces of the leaf; it is usually of a red tint on the upper surface, and often has an ornamental appearance. Other species of *Salix* have their *Euura* galls, and one of these, discovered by Mr. Lees, is remarkably beautiful; it is spherical and highly coloured, resembling a cranberry. This beautiful object was made known to naturalists in the pages of the 'Entomologist.' Next to the willow, the alder seems most obnoxious to the attacks of a *Euura*: the parent insect deposits its eggs in a double series on the back of the leaf, one in the axil of each lateral rib, and almost touching the midrib of the leaf: the galls appear in the same situation on the upper side of the leaf, and their appearance, thus regularly arranged, is very striking. I know nothing further of its economy: the larva is readily found by cutting open the galls, and its lethargic habits are favourable to the compilation of an accurate life-

history, which I trust soon to receive from the pen of Mr. Healy, the *facilis princeps* of cryptocampic entomologists, and to whom I have transmitted specimens of the galls: I propose giving this species the provisional name of *Euura Alni*. Next to the alder, the cultivated varieties of pears seem most subject to the attacks of a *Euura*; and in this instance the galls project only from the *under* side of the leaf: I have gathered one hundred of these galls from a single tree, and in one instance only have I found two on a leaf. After the escape of the perfect insect the galls become somewhat shrivelled, and the upper surface assumes a brilliant orange colour: I give this species the provisional name of *Euura Pyri*. The oak, so proverbial for its multiplicity of its *Cynips*-created galls, is infested by a species of *Euura*: it is far from common, and its gall, like that of the willow (*Salix fragilis*), projects from *both* sides of the leaf: I propose for it the name of *Euura Quercus*. It will be interesting to determine whether this species infests both the supposed species of British oak: I have hitherto only found it on that called *Quercus pedunculata*. The *Druidæ* are ubiquitous; every tree, every shrub, every herb, appears to support a species. The lordly oak, the graceful birch, the glutinous alder, the polynymic bramble, the sprightly agrimony, the gay buttercup, and the humble tormentil, not to mention the ash, hazel, hornbeam, maple, elm, beech and wych-elm, are alike subject to their attacks: the brown blotches on leaves, universally attributed to some unascertained lepidopteron, dipteron or coleopteron, proclaim their presence: their only name at present is legion; but as Mr. Healy, year after year, throws the light of his researches over the Cimmerian darkness of our ignorance, we may hope to receive for them a nomenclature and arrangement. The most common of all galls are those of the spruce fir, which are supposed by Mr. Westwood to be the work of a Hemipteron, as noticed in the 'Gardener's Chronicle' for 1852, No. 37, p. 580. The galls produced by this are peculiarly beautiful; like the polymorphous galls of *Cratægus oxyacantha* and *Ulmus campestris*, they appear to originate in the woody fibre and not in leaves or buds; nevertheless, as the twig swells under the expanding influence of misdirected sap, these galls assume a regular figure, and, as in innumerable



other instances, simulate in some degree the fructification of the tree which bears them. But perhaps the most interesting of the native galls observable at this season are those of *Rubia peregrina*, a plant rarely met with except on the south coast of England, especially in the Isle of Wight and Cornwall. This beautiful little gall so exactly resembles the fruit of the *Rubia*, especially when both are slightly shrivelled after gathering, that it is absolutely necessary to cut open both productions, and expose the interior, before deciding whether it contains the usual seed or the larva of a *Cynips*: in the latter case the substance is always of a spongy texture; the size, colour and situation of the two are absolutely identical: the *Cynips* which produces the gall is unknown: I call it provisionally *Cynips Rubiæ*. Lastly, a campanulate gall, about the size and shape of that delicate little object, a spider's nest, was very commonly suspended from the under side of the leaves of the alder; its sickly yellow-green colour made it very conspicuous when the leaf was turned up, but from the upper side it was invisible.—*Edward Newman*.

*White Butterflies, &c.* — The comparative rarity of white butterflies has at least not been universal. *P. Brassicæ*, *Rapæ* and *Napi* have been in abundance here all the summer. *A. Cardamines* was in profusion till the very end of June. We have very few varieties of butterflies here, but our usual species occurred plentifully. *Atalanta* was very late in appearing this year: I saw the first specimen on the 26th of August. Sugaring has proved useless. At light I have had but indifferent success. I never saw so few *Co-leoptera*. I am but a novice in collecting, but certainly have fared worse this season than ever before. This time last year the garden swarmed with *P. meticulosa* and *P. Gamma*; this year, as yet, not one has appeared.—*W. Douglas Robinson; Kirkennan, Dalbeattie, September 9, 1869.*

*White Butterflies.*— In North Wales, during the first part of this month (August), white butterflies appeared to me to be particularly numerous, more especially *P. Brassicæ*.—*Alfred W. Druce; 21, Cheyne Walk, Chelsea, August 25.*

*White Butterflies, &c., at Thruxton.* — *Pieris Brassicæ* I have not seen until to-day (Aug. 19), when I observed a few specimens on some plants in the kitchen garden, but I have every reason to think they will be quite as common as usual

next month. *P. Rapæ* appears to be about as abundant as in ordinary seasons. Other butterflies peculiar to the neighbourhood seem particularly plentiful; and I have also noticed *Colias Edusa*, with one or two other rarities. Both the larvæ and pupæ of *Acherontia Atropos* have occurred in at least two gardens in this village, but I have failed, when handling the specimens, to detect the "cry" so observable in the perfect insect. The genus *Vespa* is almost wholly unrepresented in this immediate neighbourhood, which is the more remarkable as queen wasps of the four common species were abundant in the spring. A few days since I noticed a solitary specimen of *V. rufa* in the scullery window.—*Henry Reeks; Thruvton, August 19, 1869.*

*Scarcity of Butterflies in Ireland.*—I have observed a great falling off in the number of *Pieris Brassicæ* here this year, but the same may be said of other species; for instance, *C. Cardui* was very abundant here last year, and I have not seen a single specimen this year. I observe a considerable deficiency of almost all the diurnal Lepidoptera, but the abundance of larvæ is extraordinary: those of *S. Carpini*, *D. vinula*, *S. Populi*, &c., are more abundant than I ever recollect.—*S. R. Fetherstonhaugh; Glenmore, Crossmolina, Ireland.*

*Larva of Lycæna Arion.*—Mr. E. Dembski, of Cheltenham College, announces that he has reared the larva of *L. Arion*: he says it is onisciform, and slightly flattened on the sides, the back being rather convex. Head very small, black or blackish brown. Body greenish, the dorsal and subdorsal lines represented by a row of three black spots on the middle of each segment. Legs almost imperceptible. Feeds on the flowers of the common thyme, on which Mr. Dembski found the eggs.—*Ent. Mo. Mag. for August.*

*Acherontia Atropos in Durham.*—Eight larvæ of *Atropos* have been taken here during the last fortnight.—*F. Raine.*

*Deilephila lineata at Lewes.*—Yesterday morning I saw, on the setting-board of a friend of mine in this town, two [specimens of] *D. lineata*, which have been brought to him within the last few days.—*J. H. A. Jenner; Lewes, May 27, 1869.*—*Ent. Mo. Mag. for July.*

*Sphinx Ligustri feeding on Willow.*—Is it a common thing to find the larvæ of *S. Ligustri* feeding on the willow?

A few days ago I knocked one down with a stick, and, to make sure that it feeds on the above tree, gave it some in a box, which it ate readily. I placed the larva in a box, with several others of the same genus, with sprigs of the privet, but it preferred the willow. — *A. B. Braine*; 47, *Ladbroke Grove, Notting Hill, September 12, 1869.*

*Agamic Reproduction of Sphinx Ligustri.* — About three weeks ago I had some eggs from a bred female of *Sphinx Ligustri*: she had no intercourse with a male, but the eggs have all hatched. Is not this unusual? — *Arthur P. Nix*; *Truro.*

[Similar instances have been recorded. See my Essay on Physiological Characters, p. 12.—*E. Newman.*]

*Pericallia Syringaria near Sheffield.* — On July 24th I captured a fine male specimen of *Pericallia Syringaria* in Ecclesall Wood. On the same evening a female was captured in the same wood by G. Saltfleck, a youth residing in Broomhall Street, Sheffield. I believe the insect has not been taken in this neighbourhood before. — *Wm. Layaock*; 36, *Randall Street, Highfield, Sheffield, August 24, 1869.*

*Hyria auroraria in Surrey.* — In the 'Field' of August 14th there is a notice of the capture of *Hyria auroraria* (the golden-bordered purple) at Egham, in Surrey. — *J. C. Wesley*; *Wetherby, Yorkshire, August 24, 1869.*

*Aplasta ononaria, &c., at Folkestone.* — I had the pleasure of capturing two female specimens of *Aplasta ononaria* at Folkestone last July. *Sesia chrysidiformis* and *S. ichneumoniformis* occurred freely. *Heliothis peltiger*, *H. marginatus*, *Spilodes palealis*, and *Camptogramma fluviata* also came to my net. *Chærocampa porcellus* was unusually common this year. *Dicranura vinula* was most abundant, from the egg to the imago; the pupæ and the larvæ, in various stages, were all to be seen at the same time. Tortrices have been rather scarce this season: *Eupæcilia flaviciliana*, *E. notulana*, *Stigmonota leplastriana*, *Catoptria citrana*, *Cochylis dipoltana*, and *Tinea subbaumanniana*, are a few of the best I could net: I allude to doings on the coast. — *F. O. Standish*; 2, *Alfred Cottages, Warner Road, Camberwell, S.E., September, 1869.*

*Camptogramma fluviata and Hoporina croceago.* — I have bred a goodly number of each—the former from the egg,

from a female taken on the coast, and the latter from larvæ collected in Darenth Wood.—*F. O. Standish.*

*Cirrædia xerampelina* in the Isle of Man.—I have pleasure in recording the occurrence of this beautiful insect in the Isle of Man. I have received a fine series captured there, during the present month, by Mr. Warrington, of Douglas. The specimens are all very richly coloured, and some of them present a remarkable variation from ordinary English examples, the golden yellow of the fore wings being replaced by reddish brown; two narrow lines of yellow only remain bordering the median band, the inner margin of which is not indented near the costa, but runs in a straight and uninterrupted line across the wing: in general aspect the moth is more like *Leucania conigera* than *Xerampelina*. Mr. Doubleday informs me that these specimens are identical with the form of *Xerampelina* which is found in Central France, and that he is not aware that the variety has been previously taken in the British Islands. The appearance of the same variety, and that a very striking one, in localities so widely separated by distance and climatal conditions as Central France and the Isle of Man, is somewhat startling, and shows how little we really know of the causes which govern the production of varieties, and their preservation or extinction in different portions of what we may suppose was once a continuous territory. In the South of France, Mr. Doubleday informs me, *Xerampelina* assumes another form, being very small and dull-coloured. I may remark that the ash, on which the larva feeds, is the most abundant forest tree of the Isle of Man, and flourishes exceedingly in its damp and warm climate. *Xerampelina* has been found in all the divisions of the United Kingdom, but I believe is nowhere considered a common insect. Probably it is overlooked, appearing in the perfect state at a period of the year when most collectors have retired for the season: the Isle-of-Man specimens were found at rest on the trunks of ash-trees; the moth also comes freely to sugar. In Scotland I only know of the capture of one specimen, by Mr. Chapman, at Gare-Loch-Head, in 1859; and in Ireland also of a single example near Drumcar, by the Rev. H. Harpur Crewe, in 1868; both of the ordinary English type.—*Edwin Birchall; Newclay, September 20, 1869.*

*Cirrædia xerampelina* at Worcester. — I have taken two specimens of *C. xerampelina* this month (September), both at light.—*C. R. Doward* ; 41, *Copenhagen Street, Worcester.*

*Cirrædia xerampelina.* — In the June number of the 'Entomologist' was recorded the taking by me of forty-one larvæ of *C. xerampelina*, and in consequence of that notice I had many applications for the perfect insect: these have now all emerged, but I am sorry to say they came out earlier than I expected, and during my absence from home for a few days. On my return home, on the 24th instant, I found them all battered and worn, so much so that nearly all of them had the markings entirely effaced from the wings, and out of forty there were only five or six which I took the trouble to pin. A considerable number of eggs have been deposited, which I hope may prove fertile, but I fear the larvæ will be difficult to rear. — (*Rev.*) *Bernard Hartley* ; *Park View, Pontefract, August 26, 1869.*

*Dianthæcia compta* and *D. Barrettii* at Howth. — "I have lately been successful in capturing a few examples of *D. compta* and several of *D. Barrettii*." — *E. G. Meek, in Ent. Mo. Mag. for August, 1869.*

*Dianthæcia Barrettii* in the Isle of Man. — "A few days afterwards I went to the little kingdom, and proceeded to Port Jack, and before I slept I secured and set a fair specimen of *D. Barrettii*. This year I have taken it again there." — *C. S. Gregson, in Ent. Mo. Mag. for August, 1869.*

*Aplecta occulta* in Essex. — I took two fine specimens of this moth at sugar in Epping Forest on the 26th of August. — *R. Meldola* ; *Park Place, Leyton.*

*Hydroporus minutissimus* in Devonshire. — During a late excursion to Slapton, about seven miles to the westward of Dartmouth, a single example of *Hydroporus minutissimus* was discovered by my wife, amongst the small submerged shingle at the edges of the Ley; and being thus warned of its presence, we continued to search patiently until a tolerable series had been obtained. Its habits are precisely similar to what I have observed in the Canary Islands and elsewhere, the species delighting in shallow, clear water, amongst the shingle of which it principally resides. — *T. V. Wollaston, in Ent. Mo. Mag. for August, 1869.*

*Thread-worms produced from Larvæ, confirmed.* — In the

'Entomologist' for July, 1868 (No. 55), I gave an account of two thread or cotton-worms ejected from a larva of *Liparis monacha*. I have now the satisfaction of giving further proofs, which leave but little doubt that larvæ are frequently attacked by this singular creature. Last June I had a number of the larvæ of *Hoporina croceago*, and lost several from the attacks of the thread-worm, of which I had some eight or nine. Their length was from six to eight inches, and they live but a few hours after being ejected from the larva. Mr. Purdey, of Folkestone, informed me that he took a nest of the larvæ of *Hyponomeuta padella*, and to his surprise, when he looked for the larvæ, they had transmuted into a mass of small thread-worms, leaving the skins of the larvæ only: I had the pleasure of seeing the worms and larva-skins. I have also heard of other instances of thread-worms coming from larvæ. The problem is, in what stage do these worms first appear in the larva? — can it be in the egg state, as is the case with the ichneumon when it attacks larvæ? Could this be solved it would add another scrap to Science. *F. O. Standish; September, 1869.*

*Pine-shoots destroyed by Hylurgus.* — Every grower of conifers must have been struck this summer with the unwonted appearance of the young and immature shoots of all our larger pines; instead of that erect and vigorous growth which indicate health, the top of each shoot has become flaccid, and has bent over, presenting an appearance that some of my correspondents have compared to the nodding plumes on a hearse. I have received specimens from Sawbridgeworth, Waltham Abbey, Hertford, Witley, Haslemere and Petworth. In every instance I have laid open one or more of the shoots, and have invariably found a small blackish beetle gnawing his way upwards along the very centre of the shoot: this is *Hylurgus piniperda* in its mature or imago state: Ratzeburgh has some excellent remarks on this destructive insect in his 'Forst-insecten,' and the late Dr. Lindley made them a subject of inquiry, and the result was published many years back in Curtis's 'British Entomology,' fasc. 104. Although the injury of which my correspondents complain has been in every instance confined to the *young shoots*, I have found the same species many years back on the *stumps* of felled trees at Birch Wood, and also in Greenwich

Park perforating the *bark* of those picturesque old Scotch firs that adorn the slopes of the Observatory hill. I am unable to suggest a remedy, but perhaps some of the sufferers may take comfort in the assurance that all attacks of insects are intermittent, and a year of excessive injury is generally followed by several years of entire exemption from the plague. — *E. Newman.*

*The Ladybirds and Wall-fruit.* — The ladybirds, or, as they are called here, “cow-ladies,” appeared in unusual numbers in this neighbourhood about the third week in July, and continued to increase until about the third week in August: from that date to this (September 8th) they have gradually but very perceptibly decreased, not, however, before they had thoroughly fulfilled their mission; in fact no aphides are now to be seen, and the ladybirds are flocking to the ripe wall-fruit, to the sweet juices of which they seem very partial. I have been unable to detect more than one species, the 7-punctata; but I found individuals differ considerably in size, *viz.*, from 0.30 to 0.40 inch, which difference I think is not due to sex alone, as I have found an abundance of intermediate sizes. While on the subject of ladybirds I should be glad to learn the origin of the old nursery rhyme,

“Lady-cow, lady-cow, fly away, fly;  
Your house is on fire, your children will die.”

—*Henry Reeks; Thruxton.*

*Entomological Notes from Bury.* — I owe you some account of my entomological proceedings this summer. I have found plenty of the imago of *A. sulphuralis*, but have been unable to find any of the larvæ, though I searched for them on *Convolvulus arvensis* in the places where the imago was most abundant. A large batch of the eggs that I sent to Mr. Doubleday has proved abortive. The larva of *Lithostege grisearia* has been as abundant as the imago, but much infested with ichneumons, which spin a very pretty gray and white cocoon, and appear in August. The second brood of *Spilodes sticticalis* was abundant in certain fields, and I cannot believe that its normal food is *Artemisia*; I think it must be rather some low-growing *Gnaphalium*, though it is well known that the larva can be reared on *Artemisia*: there is not *Artemisia* enough in the locality to account for the

numbers of *S. sticticalis* in particular places. In the spring I pitched upon a particular field as likely to produce *Acidalia rubricata*: I watched it a good many times without success, till one evening at the very end of July I found myself surrounded by pink and purple beams of light darting in every direction: these were without exception males, nor did I obtain any number of females for more than three weeks. This moth fades terribly, and a specimen that appears brilliant when alive wears a comparatively dowdy appearance shortly after death. It is very local indeed, and you might go for many miles and think yourself lucky if you obtained a single specimen, while in this field, especially in one corner of it, there were plenty. I fancied that the strawberry clover (*Trifolium fragiferum*) might possibly be the attraction that brought them to the spot. I have therefore tried to bring up the produce of a batch of eggs on that plant: they ate it certainly, but have deserted it for *Polygonum aviculare*, for which they show a decided preference. Their proper food-plant is still, I think, unknown, and can only be discovered by finding a female in the act of oviposition. It is very clear that in confinement the larva will eat several plants. I have also taken a good many imagos of *Eremobia ochroleuca*: I found them all, without exception, on the flowers of *Centaurea scabiosa*; not one was found on *Centaurea nigra*, which is still commoner. — (*Rev.* A. H. Wratislaw; *School Hall, Bury St. Edmund's, September 16, 1869.*

*Entomological Notes from Steyning, Sussex.*—I have come to the conclusion that, on the whole, insects of all kinds are not common this season. Brassicæ, which was a nuisance last year, especially on my cabbages, is quite a rarity now. *Paphia*, reported common at Lyndhurst, I have not seen; whereas *Aglaia* has been plentiful on our downs. Of the blues, *Adonis*, *Alexis*, *Agestis*, *Alsus* and *Corydon* have been unusually abundant, especially the first. *Edusa* has been scarce: a friend who went out with me in quest of them took all or nearly all we saw, amounting to twelve. *Hyale* I have not observed. Of *Adippe* I have taken but one specimen. We met on our return with hundreds of *Botys flavalis*, but being tired, and not knowing its local character, we secured only a few specimens. I have had three larvæ of



A. Atropos brought to me. One singular trait of this year which my friend and self commented upon was the absence of moths at sugar: I have sugared both in my own garden and in a wood near on several occasions, and have had a *nil* return: have any of your correspondents been blessed with a like result? — *M. T. White; Steyning, Sussex, Sept. 18.*

*Name of a Caterpillar.*—Colour apple-green corded transversely with white, the cords so interrupted on the back as to form a medio-dorsal stripe of green. The head is round and whitish, with the ocelli black and distinct; the segments of the body not apparent. When at rest the caterpillar is rolled up in a compact ring, holding on firmly by its feet alone; and when annoyed and made to move, eight pairs of claspers are seen, the terminal segments alone wanting them, these being depressed and curved inwards. It was found on Sept. 4th, on willow (*Salix aurita*), and in a few days spun an oval cocoon of a close texture, glossy and semitransparent, between its leaves. — *Wm. Cameron; Balquhiddy, Crieff, September 15, 1869.*

[The larva is that of *Tenthredo Capreæ*, an insect hitherto undescribed as British.—*E. Newman.*]

*A Musical Larva.*—On September 10, 1868, during one of our regular Monday morning excursions, I captured on a beech tree, a short distance from London, a larva which I judged to belong to the genus *Smerinthus*. Its chief peculiarity, to which I wish to call attention, was its power of emitting a singing noise when handled or disturbed. The noise was similar to that produced by that pretty little beetle so common in our gardens, *Lema trilineata*. This is the only instance of a musical larva that I have met with, nor do I remember to have ever seen any mention in entomological books of a similar case. I should be glad to know, Mr. Editor, if you, or any of your correspondents, have ever noticed this musical power in any larva, or if you can explain the manner in which the noise is produced. My specimen was full-grown, and in a couple of days duly passed into the pupa stage under the earth in a flower-pot, which I duly deposited in my winter box that I kept buried in my garden, but to my great disappointment it shared the fate of most of the *Smerinthian* larvæ I have ever attempted to rear, and although it survived the winter it failed to reach

maturity. I subjoin a description of this larva, as possibly some of your correspondents may recognise it:—Length  $1\frac{1}{2}$  inch: body tapering anteriorly. Head large, triangular, of a deep shining green colour, with lateral yellow stripes; a reddish spot at the apex; a paler green and granulated on the back of the head behind the stripes: mandibles black. Body apple-green, thickly covered with small greenish yellow granulations; the anterior segments semitransparent; on each side seven faint greenish yellow oblique stripes edged anteriorly with large granulations, the central stripes having a reddish tinge, the last stripe wider than the rest and terminating at the base of the caudal horn, the latter at an angle of  $20^\circ$ , recurved backwards, purplish red and thickly granulated; the anal plate with a central elongated black patch, with a larger granulation on each side: stigmata small, round, and dull red. Under surface slightly paler than the upper, with a darker central line. Feet pale green, spotted with red; prolegs greenish, semitransparent.—*E. B. Reed, in the 'Canadian Entomologist.'*

[This description corresponds very nearly to that of the larva of *Smerinthus excœcatus*, by Mr. Lintner (Pro. E. S. Phil. iii. p. 665). We have never ourselves met with any Lepidopterous larva that emitted sounds; the imago of *Sesia Thysbe* is described by Dr. Gibb (Can. Nat. and Geol. 1859, p. 122) as giving forth a loud and most striking note, “something like the squeaking of a mouse or a bat,” which he attributes to the action of the respiratory organs. The well-known European death’s-head moth (*Acherontia Atropos*) emits a somewhat singular noise, even before leaving the pupa-case, as well as afterwards; Kirby & Spence state further (letter xxiv.) that “its caterpillar, if disturbed at all, draws back rapidly, making at the same time a rather loud noise, which has been compared to the crack of an electric spark.”—*Editor C. E.*]

*Tortrix pomonana* — The present has so far been a very trying season as regards vermin in the gardens; caterpillars and blight of all kinds have been very abundant, as might have been looked for from the mildness of the winter. But of all the pests that infest the garden, I find none so difficult to deal with as that dreadful apple-moth, the *Tortrix pomonana*. My apple-trees, particularly some of my espaliers, have for

years been almost cleared of apples by this horrid little pest. I have been disgusted to find again and again a splendid promise of a crop, and before the season was over nine-tenths of the fruit bored through and spoilt. I have thought of various methods of eradicating or of mitigating the pest. I tried scraping and searching the bark of the trees for the grubs, and dressing with Gisburst, &c. ; I also tried trenching the earth beneath them, and exposing it to the hardest frosts, and even removing it and replacing it with fresh ; but it was of no use. This year I fully intended having some grand field-days, or rather nights, against the moth itself, with lantern and net, and "catch 'em alive;" but unfortunately, at the end of May, about the time of the moth's appearance, I had to leave home, so nothing was done. Lately, accordingly, I began to find my small apples being bored, when I became seized of an idea, which I impart for the benefit of your readers. The moth lays an egg in the calyx of the apple, just as it is forming from the blossom. This egg turns to a very small grub about the time that the young apple is formed. It sets to work and eats its way to the core, devours or destroys the seed, out through the other side, and into another apple, serves that the same, and, having done its will with it, on to another, and so on, until the grub, being full-fed and greatly increased in size, crawls out and bestows itself somewhere, either in the earth or bark of the tree, to become a moth and lay many eggs in due time. That the grub passes from apple to apple is certain. Take two apples off the same bunch, — you will find corresponding holes touching each other in them, and all covered with dirty brown exudation. Cut one up, and you will find the grub has pierced it entirely, and that it has left it; cut the other, and you will find the puncture only as far as the core perhaps, and then you will find the little grub. I have frequently seen them just emerged from a hole, and working their way into a fresh one in another apple. In the early part of June the grub is as small round as a very fine pin or a moderate needle. Later on, as we all know, he gets to be as big round as a fat wheat-corn, but that is not until he has pierced many apples. Now, this being the case, and that it is so I am sure, my notion is this, and I am diligently acting on it: on all the trees I can get at I search very carefully, and every

apple which I can find bearing any mark of the grub's handiwork, and it is very easily detected, I carefully pick off, and have them burnt or destroyed in some way. By pursuing this method at the present time, I shall considerably reduce the Tortrix as far as my garden is concerned; but if I do not quite succeed in that, at any rate I shall certainly save a respectable share of my fruit, enough for a fair crop. Had I gone to work earlier I should have saved a big one on some trees. I find that the topmost fruit is attacked first. To give some idea of the terrible ravages of this dreadful little pest, I will cite two instances. I took a great number of pierced apples off my espaliers, still, however, leaving a very good crop indeed behind; and as I find that very few of those apples left are now touched, as I search day after day, I hope that I am pretty safe for a crop, which I am sure I should not have been had I attended to the trees later. Having finished them, I turned to some of my smaller standards, such as I could conveniently, by the use of steps, search all over, unfortunately losing some days between. The first tree I looked over was a young Wellington, some five or six years old, just coming into nice bearing. I picked 196 apples, or more than four-fifths of the crop, off that tree, which had been pierced by the grub. There may be two or three dozen or so left; if there are, it is the outside. I then went to a Nonpareil, a great natural bearer, an older and larger tree. Off this I picked 515 apples one afternoon, and 94 the next morning: this was perhaps five-sixths or more of the crop. In both instances the crop left was very small indeed for the tree; while but for the moth it would have been very large. Had I looked at these trees as early as I did at the espaliers, I am convinced that I should have saved at least half the crop or more. It would be a curious experiment, easy to try, to take some of the grubs out of apples (as may easily be done), and to place them on new ones, so as to gauge their rate of destruction from day to day. It seems strange, considering what a dreadful pest this is, that we are not better up in its habits and powers. I feel sure that, by attending to the apples early in June, a good crop may be saved, if gardeners will give themselves the trouble, while they will certainly do much to save their trees from a like visitation next season.—*Francis Francis, in the 'Field.'*

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*Life-history of the Goat-moth.* By EDWARD NEWMAN.

IT would seem not to be generally known that there exists, concealed within the trunks of our fruit and forest trees, a host of insect enemies which mine the solid wood, and leave behind them nothing but their sawdust-like excrement and inevitable decay. I suppose these depredators to be generally unknown,—I do not mean unknown to entomologists,—because I receive such numerous requests to explain what they are, and whence they come, whenever an occasional specimen has been exposed to observation by the breaking of a bough or the felling of a tree. We have three very distinct families of these mischievous creatures, which I had the pleasure of first associating, in 1832, into one tribe or natural order of moths, under the name of Xyleutites or carpenters. The moths produced from these carpenters are wonderfully dissimilar, the caterpillars and chrysalids wonderfully alike. Having elsewhere entered somewhat into the distinctive characters of these families, or in other words “having done the scientific,” I do not feel disposed to enter further on that branch of my subject at present, more especially as I am by no means satisfied with my knowledge of the group: a glance at the pupa of *Hepialus Humuli* leads me to desire that the swifts should be admitted among the carpenters; and there are certain genera even among the *Tineæ* who might set up a fair claim to admission into this most mischievous association. But my business at present is exclusively with the goat-moth.

There is a large tract of land lying to the south of the Thames and of Rotherhithe, and extending nearly to the Kent Road, occupied principally by market-gardens and rope-yards: this is known by the name of the “Jamaica Level.” Within my recollection this tract rejoiced in magnificent orchards of pear-trees; and its ditches, many of them

tide-ditches filled from the Thames, were so fringed with willows that the whole tract looked like a willow-forest. It has been said that the willow-trees once numbered 100,000; this is questionable: I will, however, vouch for the presence of thousands in the year 1830; yet now, in the year 1869, there is scarcely one. For years rows of wretched worm-eaten stumps were visible here and there; but even these are disappearing, and scarcely a trace remains of that willow scenery which Claude so delighted to paint. And this is the work of the goat-moth, or the work, rather, of generations of goat-moths, aided and abetted, it must be confessed, by what is termed the spirit of railway enterprise.

At the time to which I especially refer, and for some years afterwards, I was the owner of an avenue of willows. It is a grand term, I admit, but truthful withal; yet although an idea of aristocratic standing may surround the proprietor of an avenue of oaks, I believe an avenue of willows in Deptford, Rotherhithe or Bermondsey, has never, within my time, been associated with the notion of plethoric rent-roll, remote ancestry, or heraldic bearings; therefore the boast of having possessed such an avenue must be taken for what it is worth, and no more. It indicates the fabrication of cables,—a process requiring the shade that is now usually afforded by a tiled shed some third of a mile in length. The willows (the individual trees constituting this avenue) were infested with musk-beetles and red underwings galore; and here I formed my first acquaintance with the goat-moth, and studied its economy with an interest that I think has never been exceeded in any of my subsequent observings.

In the United States of North America another species of *Xyleutes*, named *Robinia*, is as destructive to the locust-tree (*Robinia pseudacacia*) as *Xyleutes Cossus* is to our English willows; and it is worthy of remark that, although the locust-tree is so universally cultivated here in England, there is no instance of its having been attacked on this side the Atlantic. Thus this beautiful tree (which we call the acacia), the balsam poplar, the Ontario poplar, and many other imported trees, are remarkably free from insect molestation. Professor Peck seems to have taken an interest in the life-history of *Xyleutes Robinia*, very similar to mine in that of *X. Cossus*, and he has given most admirable details of its

doings in the fifth volume of the 'Massachusetts Agricultural Repository and Journal.' A very similar caterpillar, and possibly the same, for it is also an American, mines the solid wood of the red oak, but its ravages do not seem so extensive, and certainly are not so well ascertained, as those of the two species I have mentioned by name. It ought here to be observed that the two species, *Cossus* and *Robinia*, although described as being so similar, have really very distinctive characters: in *Cossus* the sexes are nearly alike; in *Robinia* they are very different, and the male is so much smaller than the female that it has been supposed to be a distinct species: it has, moreover, a large yellow-ochre-coloured spot near the hind margin of the hind wings. I will, however, leave *Xyleutes Robinia* to our American cousins, who have studied its habits so successfully, and confine my attention to its English relative.

I have already spoken of the predilection of *Cossus* for willow, but it by no means confines its attentions to this tree; elm, oak, birch and alder are among those trees which, next to willow, it has selected for its operations. Mr. Corbin describes its ravages in the New Forest to be principally committed amongst the oaks: he writes to me in these words:—"The trees in some parts of Ringwood, particularly oaks, are entirely perforated by the destructive larvæ of this odoriferous species, and yet I have never seen the perfect insect. While pupa-digging during the past winter, on the estate of the Earl of Normanton, I tore off a piece of loose bark, and in it were no less than eleven larvæ of this three-year wood-feeder, all about three-quarters of an inch in length. In 1860 I succeeded in getting three larvæ to turn to pupæ, but, by some misfortune or other, not a perfect insect appeared." The larva, like that of *Robinia*, certainly remains three, and possibly four, years in that state; and when anyone has witnessed its extraordinary power of destroying timber in a single day, as I have done when I have had it shut up in a deal box, and will calculate the sum-total of this destruction continued for three years (I am not good at such calculations myself), he may form some idea of its doings.

To begin the life-history of this noxious moth at the beginning, we must watch the act of oviposition. The female

is a large, dull, heavy creature, flying only occasionally, and always in the night, and greatly addicted to intoxicating sweets: she is furnished with a moderately long ovipositor, so slender and flexible that it can be introduced into the smallest crack of the bark. In order to make myself thoroughly master of her mode of proceeding, I fastened a full-bodied female to a strip of willow-bark, and carefully observed what took place. Apparently quite indifferent to her most uncomfortably confined position, her ovipositor was at once extruded, and its extremity moved about in every direction. This curious instrument, from its excessive power of flexion, reminded me of the tongue of a giraffe, but I fear many of my readers may not have studied that extraordinary organ, and so will fail to appreciate the simile. However, I may describe the ovipositor of the goat-moth as a flexible instrument capable of great extension; the extremity is pointed, and seems ever on the alert to examine the surface of the bark until it finds a crevice to its satisfaction: the ovipositor by no means accepts the first crevice it enters, but continues its examination for many seconds: when fully satisfied that it has discovered a safe place, an egg is deposited at the very bottom of the crevice, and the instrument is withdrawn. Another crevice is then sought for and found, and another egg deposited. There is something very extraordinary in the manner in which the worm-like ovipositor prosecutes its search for a suitable nidus for the egg, the stolid moth seeming quite indifferent to the proceedings of this organ, so essential to the continuation of its kind; and while the protruded instrument is twisting itself in every possible direction, the body of the moth remains motionless, as though it were far too dignified to take any notice of the proceedings of its caudal appendage. The deposition of single eggs I have found the usual, but not the universal, practice; sometimes three or four eggs are deposited together in a cluster, and in one instance as many as thirty-nine eggs have been found piled together without any appearance of regularity: the eggs are about the size of rape-seed and very nearly round, but slightly elongated at the crown; the surface is striated both longitudinally and transversely; the colour is dull pale brown, the interstices of the longitudinal striæ being of a darker colour, and therefore



being rendered more conspicuous. At the end of ten or fifteen days, according to the temperature, the egg-shell is opened by the contained caterpillar, and the little creature destined to commit such havoc makes its appearance as a slender maggot, partially and thinly covered with hairs: these hairs, however, are scarcely noticeable, unless the newly-born caterpillar be examined with a lens. The head and 2nd segment are brown, shining and very hard; the latter is covered above by a corneous plate, and both are remarkably large for the size of the larva, carrying to excess that law of Nature which ordains that the heads of all young animals should be large in proportion to the body: the 2nd segment in this instance partakes of the same character. No sooner has the infant caterpillar escaped from its first prison than it seeks to immure itself in another, and now for a period of at least three whole years. It seems early gifted with gnawing propensities, for it may be seen entering the bark through a little hole it has drilled, not thicker than the slenderest wire; and this is done within ten hours of its making a first appearance on the stage of life. The aperture through which it has passed would inevitably escape even the piercing eye of an entomologist, were not the spot marked by a small collection of the finest possible sawdust, which accumulates on the surface as the juvenile carpenter works his way into the interior. We now entirely lose sight of the hero of our narrative, and only find him again in after months, or after years, by stripping off the bark, or by digging into the solid wood of an infested tree. Mr. Douglas, so favourably known by his delightful 'World of Insects,' gives a detailed narrative of an investigation he conducted with his own hands and eyes. In this instance it was an elm—a hedgerow elm—that had been so weakened by the doings of the carpenters that a high wind had blown it down, and there lay the giant slain by a maggot.

“Removing a portion of the bark,” says Mr. Douglas, “I found nine caterpillars between it and the wood of the tree. Anxious to obtain as many as possible, I sent for a saw, and had the mined portion of the tree taken off and brought home. The stem thus cut measured one way 15 inches in diameter, and the other way 23 inches in diameter, both measurements taken at the bottom of my block, for the

tree was not round; the length of the block was 2 feet. I had a large earthen pot in which I was desirous of placing the mass intact, but found it impossible; though rather more than 2 feet deep, it was only 16 inches wide. I therefore cut the block down to the necessary size, and in so doing disimbedded twelve full-grown caterpillars, twenty-one of two years' growth, and thirty-four of apparently one year's growth—a total of sixty-seven; and apparently the remainder of the block was as densely populated as the part I cut up. The upper part of the block where sawn off had no traces of holes. The lower part was two-thirds as rotten as tinder, the other third having a few holes only visible. The centre that I exposed to view was riddled." ('Intelligencer,' vol. x. p. 14).

This gives a truthful and perfectly unexaggerated idea of the destructive powers of this insect. I much prefer these numbers and measurements to any vague terms, as "enormous," "numberless," "myriads," "immense," and so forth. One can't help believing in statistics so carefully prepared, while we discredit the superlative from its very vagueness. Mr. Hind supplemented this account with another of a similar "grubbery" found on cutting down a tree in the grounds of the Toxophilite Society in Regent's Park; in this instance sixty caterpillars were found in company. No sooner are these caterpillars exposed than a most pungent odour of he-goats is made manifest,—an odour peculiarly offensive to some olfactories,—and hence arose the name of "goat-moth" given by common consent to this destructive insect.

I have already said that the caterpillar of the goat-moth lives for three years. This fact seems clearly established by the three different sizes of caterpillar which are almost invariably found in company. A few, very few, experiments have been made to keep it for so long a period with the view of testing this; and it is quite certain that these have resulted in strengthening the belief in this prolonged existence.

During the whole of their larval life the creatures continue to gnaw the wood, converting it into sawdust, and discharging it in that state entirely unaltered, except by the abstraction of the starch, a fact discovered by Mr. Spencer, who thus describes his discovery in the pages of the 'Zoologist':—

“Some young friends of mine having brought me a fine specimen of the larva of *Cossus*, I was curious to know the nature of the milky fluid the insect threw up in the bottle in which it was confined. A portion, dried upon a glass plate, being submitted to one of Ross’s achromatics, was found to be pure starch, polarized light showing the black cross very beautifully on each grain. I had hitherto imagined that the larva of *Cossus* consumed the wood of the trees into which it bored: it appears, however, more nice in its appetite, extracting the nutritious juices only. In this experiment I was struck with the amount and purity of the starch.” (Zool. 2612). I have no doubt, however, that the sawdust which we find in the galleries of the goat-moth has actually passed through the alimentary canal, the starch being extracted in its passage.

The full-grown larva is  $3\frac{1}{4}$  inches in length, and about 2 inches in circumference; it is very maggot-like in appearance; the head is flat, porrected on the same plane as the body and rather rugose; the mandibles are arched and very powerful: the body is depressed and wrinkled both transversely and longitudinally: there is an appearance of its having fourteen segments, an appearance only, and produced by a division or fold of the 13th: every segment, not excluding the head, emits ten, twelve or fourteen rather strong bristles; and the 2nd segment has a smooth dorsal plate of intense hardness. The colour of the head and of the plate on the 2nd segment is black; the latter is divided by a longitudinal medio-dorsal line into equal halves, each of which projects a large lobe towards the posterior extremity of the larva; the rest of the body is rich ochreous cream-colour, with a very broad purple-brown medio-dorsal stripe: the spiracles are brown, and each is deeply seated in an oval cup-shaped cavity which is edged with brown.

Having attained its full size, the caterpillar amuses itself by lining its burrow with a thin coating of silk, for what purpose I know not; and it also spins within its burrow or gallery an oblong cocoon, composed of silk and sawdust, the sawdust being of its own manufacture, although probably not prepared for this especial purpose. This cocoon is so excessively tough that it cannot be torn open without the greatest difficulty. In this retreat the caterpillar often

remains a whole year without feeding, and probably without moving. It does not change at once to a chrysalis, as is so generally the case with caterpillars after they have spun their cocoon, but still remains a caterpillar, rather contracted, rather shrivelled, but still a caterpillar; and if exhumed from this self-provided tomb and exposed, it will often exhibit the caterpillar faculty of crawling with considerable energy. I am by no means certain that it always exists for a year in this semi-animate imprisoned condition; but from my notes it seems that I have thus found it in August, October, November, February, March, April and May; and the late Mr. Standish told me that he kept some specimens between three and four years, and that during all that time they pertinaciously refused to assume the pupa state, with which unnatural conduct he was eventually so disgusted that he threw them away to manage matters for themselves. Nevertheless, towards the end of May, or sometimes earlier, it generally discards the caterpillar form and becomes a chrysalis, which is possessed of very peculiar characters combined with extraordinary locomotive powers. Before this change the caterpillar emits from its mouth some solvent fluid in sufficient quantity to destroy the continuity of the silk, and thus soften that end of the cocoon which is nearest to its head; and now that it has become a different creature, covered with a coat of mail, it forces its way through this softened part, and escapes, to travel about its galleries at pleasure. The idea of a travelling chrysalis may be new to some of my readers, but such is really the fact. Each segment of the body is furnished with two transverse rows of tooth-like projections, which answer the purpose of feet, and by the assistance of these and a methodical wriggling of the body, it is enabled to traverse its galleries with a facility and celerity that are truly marvellous. It pursues its tortuous journey until it reaches the extreme outside of the bark, where it finds a portion gnawed away and so thinned as to be forced out by mere pressure of its head. It may seem a strange conceit that the chrysalis can use its head as a kind of battering-ram, but it is no more strange than true; and it is equally strange, but equally true, that it finds a part of the bark sufficiently thin to admit of an opening being thus made. I may remark, in the first place, that the provision

for an exit was without doubt the work of the instinct-guided caterpillar itself, long, long ago, and certainly without the slightest conception of the remote contingency of its being required hereafter as a means of escape, and ultimately of procreation and oviposition, — duties not to be performed in the interior of its ordinary dwelling-place.

Towards the end of June the time for the final change arrives, and the chrysalis forces its head and shoulders through the weak place in the bark; the component parts of its shell or case then separate, and about three o'clock in the afternoon the moth crawls upwards for ten or fifteen inches, and then rests, with its crumpled wings hanging down, until they have expanded, assumed their ultimate form and consistency, and are fitted for those very short excursions that the now mature insect is required by nature to accomplish.

A very familiar-looking Ichneumon is parasitic on the larva of the goat-moth, and attacks it in all stages of its growth, causing various speculations by the result. Trifling deviations from the ordinary mode of pursuing the path of life are much more interesting in insects than in ourselves: insects follow the leader as a matter of course; *we* only do so when it answers our purpose: insects are proud of following the leader; we do so by stealth and often with confusion of face, and we don't like to be found out: insects are in this respect much more consistent in their general conduct than we are. It is on this very ground that, when an insect deviates from its ordinary course, we like to know the why and the wherefore; in fact we want to be told all about it. Now, there are occasionally to be met with small cocoons of *Xyleutes Cossus*, indeed so small that entomologists in general will not believe them to be the cocoons of *Cossus* at all, and suppose them to be those of some undiscovered species of *Sesia*, a trifle less perhaps than *Apiformis* and *Bembeciformis*, and a trifle larger than *Tipuliformis* and *Myopæformis*. Under this idea the little cocoons are cherished, but perversely refuse to produce moths, being always infested by a red-legged Ichneumon, the familiar and odoriferous *Lampronota setosa*. This fact still adds to their value and to the mystery; for everyone wants to know what undiscovered lepidopteron always turns to a red-legged

Ichneumon that smells like a he-goat. These small cocoons occur in the ordinary galleries of the goat-moth, sometimes in oak, commonly in elm, more commonly in willow, always very near the outer bark, always compact, tough, plentifully provided with silk, and abundantly intermixed with carpenter's chips.

I have said these small cocoons invariably produce Ichneumons, and always of the same species. Does it then follow that when the larva of the goat-moth is stung by an Ichneumon, it always becomes dwarfed, and, dwindling to the dimensions of a moderate-sized *Sesia*, terminates its existence in this aborted form? Certainly not as a rule: on the contrary, the largest cocoons frequently produce Ichneumons, giving no indication of having contained a parasite until the said parasite emerges and perambulates the tree-trunk, quivering his antennæ and rustling his iridescent wings. The mystery admits of another solution. We have seen that the larva of *Cossus* is of long life: it is also of slow growth. Now, these insect Methuselahs never come face to face with their enemy the *Lampronota*; but this lady obtains access to them by thrusting her ovipositor into one of their galleries, having first ascertained by antennal investigation that the gallery contains an inmate. Thus aiming at random, the egg may perchance be deposited in the body of a sleek four-year old, in the slimmer body of a three-year old, or perhaps in the interior of a mere colt, a juvenile that has not yet celebrated a first birthday. Certain though it be that the goat-moth larva lives for several years, we have no evidence of the longevity of the Ichneumon larva; on the contrary, all the evidence yet collected, all the hitherto ascertained facts of its life-history, go to limit its span of life to a single year; the egg of one year producing a fly the next. Hence, feeding away with the normal voracity of its kind, the Ichneumon larva exhausts the *Cossus* larva in a few weeks or at most months, whether it be one year old or four, always, however, allowing it life enough to form its ordinary cocoon, an operation with which no amount of ichneumonizing ever seems to interfere; and hence also we have cocoons of various size proportioned to the age of the *Cossus*, but quite independent of that of the Ichneumon. I think, therefore, that no doubt need now be entertained on

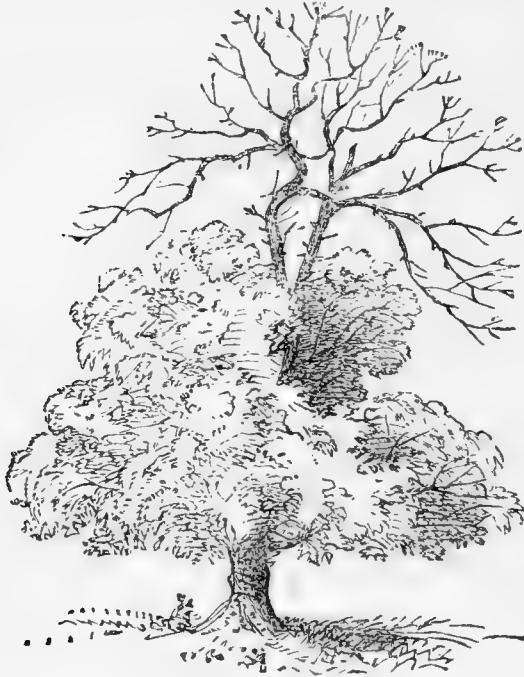
the subject of these familiar little cocoons, for of a certainty they are the progeny of veritable "goats," and possess the genuine fragrance of their sires at whatever period the thread of their existence may be cut by the parasite within.

According to rule the perfect goat-moth ought to eschew sweets and live on air, since it is arranged among the Bombyces, a tribe to which Nature is supposed to have denied even the semblance of a mouth. But the goat-moths themselves can't see the matter in this abstemious light, and sip liquid sweets wherever they can be found, being especial toppers of the sugared beer with which the entomologist paints the trunks as a lure for Noctuæ. This propensity is very puzzling to that large class of entomologists whom my friend Mr. Stainton characterises by the grandiloquent name of "incipients," and consequently these young gentlemen record the fact, as often as it intrudes itself on their notice, as a discovery in our science. I am always gratified to receive such notices, because they imply not merely observation, but reflection also; and I invariably hand to the communicant a private explanation of the phenomenon, in order to save him from that banter which often assails the discoverer of a mare's nest.

It is quite impossible for the trees which have been destroyed by the carpenter caterpillars as they are termed, that is the larvæ of the goat-moth, the leopard-moth, and the various species of Sesidæ; I repeat it is impossible for such trees to escape the notice of anyone possessed of eyes, and knowing how to use them. Let those who doubt this take a ticket by the London Bridge and Victoria Railway, passing through the Crystal Palace, and let them return by the South London Railway (a smaller circle), crossing the main roads to Wandsworth, Clapham, Brixton, Denmark Hill and Peckham Rye, and thus cutting through suburban establishments, the proprietors of which had believed themselves settled for life, and had indulged that taste for ornamental planting which is so characteristic of the well-to-do Englishman, every proprietor believing he is creating a terrestrial paradise of his own. Alas! how futile are our calculations; how vain are our aspirations. The owner foretold the advent of a forest shady as Vallombrosa: *Bajulis viisque ferreis aliter visum est*. That stag-headed tree (Fig. 1) is the work of a

carpenter. Again, observe that single branch (Fig. 2): it looks as though blasted by lightning; it is no such thing: that branch has yielded to the unceasing efforts of some irrepressible carpenter who has laboured in silence and in darkness, and daylight exhibits the effects.

But there is more than this. Every now and then, as the dawdling train crawls into one of its numerous stopping-places, groaning as if in commiserative sympathy with its wretched shareholders, the observer, now that his attention has been called to the subject, will see a totally leafless tree



[Fig. 1.

(Fig. 3) standing up in its desolate grandeur as a *memento mori* to all the exuberant greenery around it. That solemn warning is the work of the goat-moth; and it will be difficult for the man who has denied, doubted, questioned, disputed, and finally been forced to admit this fact,—it will be difficult for such a one to overrate its importance. He will see in these dead and dying trees evidences of an insidious power working in secret, and one with which he knows not how to contend. This enemy is like the thief who comes in the night while men sleep.



It may be regretted, but I think it must be admitted, that we are at present entirely without a remedy. The mischief is done before it becomes patent; the premature falling of a leaf is often the only symptom that a tree is doomed, and when that symptom is exhibited the case is hopeless. The decorative remedy of whitewash is a sweet thing in orchard scenery, and is greatly favoured and recommended by the pomologist; but it certainly has no effect for good or for evil on the decorated tree beyond that of gratifying the eye, which is scarcely the object desired by the whitewasher.



Fig. 2.

But although man in his ignorance can provide no remedy of his own, he may yet, should he so incline, avail himself of Nature's remedy; he might at any rate allow that remedy to take its own course, and not interfere with its operation. When lately in Herefordshire I was particularly struck with the beauty and the number of green woodpeckers crucified and preserved in what is called the Keeper's Museum; the barn doors and trunks of trees are quite gay with the parrot-like plumage of this gorgeous bird. On one occasion, while examining a museum of this kind, a keeper, with both

barrels at full cock, but resting peacefully in the hollow of his arm, came up to me, and, with the sagacity of his cloth, and perhaps also with a distant prospect of beer, entered on a friendly interchange of sentiment, from which it appeared that all birds were "vermin," and ought to be destroyed; that the "eckul" was no better than the rest, and was a "sly customer," getting round the tree to avoid the gun, and sucking the eggs of pheasants whenever opportunity offered. I make no pretence of being able to remember the exact words of the conversation, but I have faithfully given the substance. I need not say that I left my new acquaintance in full possession of his conviction that it was a meritorious act to kill an "eckul" (*Pica viridis*).

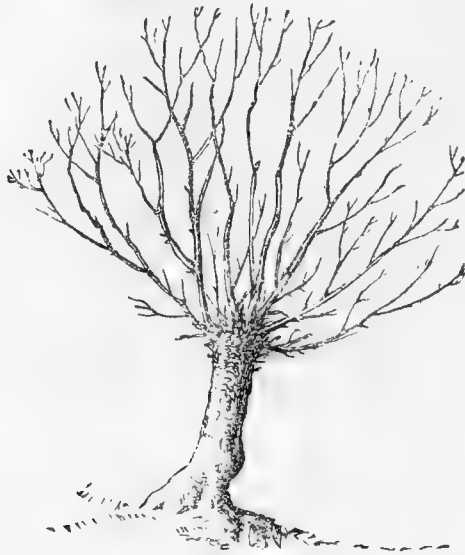


Fig. 3.

Now it so happens that by an inscrutable instinct the woodpecker is able to discover these mischievous larvæ, while perfectly concealed from human vision, deep in the solid wood of oak or elm. He drills a shapeless hole, seizes the culprit in his powerful and pointed beak, and drags him out, *nolens volens*. He would by this means, and solely in order to gratify his own appetite, most willingly save hundreds of thousands of pounds' worth of timber every year; but the proprietors in all timber countries pay their game-

keepers high wages to destroy their friends. It is the old story of poor Gelert: the benefactor is slain under the mistaken idea that he is an enemy. Country gentlemen! why will you not teach your keepers the simple truth?—indeed, why will you not learn it yourselves? Nature is a system equally balanced in all its parts: you should study Nature and endeavour to understand her. Once upset that nicely adjusted system, and all goes wrong. It is solely to you and your mistaken policy, that the farmer, especially in Scotland, is indebted for those hosts of wood pigeons that are now devouring his substance. The birds of prey you have destroyed so ruthlessly were sent to hold these depredators in check. To you the forests are indebted for those swarms of wood-boring caterpillars which are now everywhere consuming the heart of oak. The woodpeckers your keepers have slaughtered were sent to arrest the destructive career of the carpenter caterpillars.

P.S. — The use of the illustrations has been kindly permitted by the proprietor of the 'Field,' in which excellent paper they have already appeared in connexion with this vital question of wood-boring caterpillars.

EDWARD NEWMAN.

York Grove, Peckham,  
September, 1869.

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*Descriptions of two new Butterflies from Queensland.*

By A. G. BUTLER, Esq., F.L.S., &c.

Genus MYCALESIS (Sátyrinæ).

1. *Mycalesis Zia*, n. sp.

Upper surface brown, with a series of dark ochreous spots along the outer margin, four in the front and six in the hind wings, the latter traversed by a brown nearly marginal line: body brown. Under surface brown, with a very narrow and nearly straight pale central line margined within by a darker brown line; two pale submarginal waved lines varied with ochraceous: anterior wings with four ocelli, posterior wings with seven, all black excepting the two intermediate ones of

the anterior wings, pupillated with white surrounded by yellow and then brown irides, and enclosed by a pale irregular line; the fourth ocellus of the anterior wings, and the first, fifth and sixth ocelli of the posterior wings, are conspicuously larger than the others: body brown: antennæ brown above, ochraceous below: expanse of wings 1 inch 8 lines.

Queensland. Coll. Druce.

Genus PAPILIO (Papilionidæ).

2. *Papilio Joësa*, n. sp.

Wings above shining pale blue, varying in certain lights to green or purplish, with broad black border and discocellular striæ nearly as in *P. Ulysses*: anterior wings with six well-defined silky patches upon the black border: body sprinkled with green scales. Wings below brown: the discal area of the anterior wings and the central area of the posterior wings covered with pale scales as in *P. Ulysses*; the discoidal cell of the anterior wings crossed by a distinct pale yellowish squamose patch: the posterior wings with seven large ocellate elongate submarginal spots, the first and seventh bright orange, the others brownish ochraceous, each bordered outwardly by a broad black margin and inwardly by a narrow violet line: body brown: expanse of wings about  $4\frac{1}{2}$  inches.

Queensland. Obtained recently from Mr. Whitely. Male. Coll. Druce.

This species is doubtless a representative of *P. Ulysses*: it differs considerably in form, the anterior wings being much less produced and relatively broader; the hind wings shorter, and with a broader, shorter and more spatulate tail; the differences of colour will be seen by the description.

These species will be figured shortly in my 'Lepidoptera Exotica.'

A. G. BUTLER.

October, 1869.

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*Description of the Larva of Emmelesia unifasciata.*—Rests in an arched position on the flowering spike of its food-plant: if touched or breathed on, it assumes the pot-hook

shape, and it can be made to fall apparently lifeless if the annoyance be continued; the head is then brought into contact with the ventral claspers, which seem to embrace it, and the body forms an imperfect ring: it crawls with activity and with the body arched. Head small, decidedly narrower than the 2nd segment, into which it can be partially withdrawn: it is highly glabrous, and, when the larva is crawling, is porrected almost on the same plane as the body; it emits a considerable number of very fine bristles. Body slightly depressed on the back, slightly dilated on the sides, and decidedly flattened on the belly; the skin is finely shagreened and transversely wrinkled, the segmental divisions being well marked; every part emits scattered hairs; the body decreases in diameter towards both extremities, the 2nd, 3rd, 12th and 13th segments being the narrowest. The colour of the head is pale brown, with small confluent spots of a darker brown, except near the mouth: the body is very much of the same colours as the head, but without the glabrous surface; the dorsal area is putty-coloured, but gets gradually paler towards the lateral dilatation, and is interrupted and varied by dark brown, which darker colour is disposed in seven interrupted, nearly equidistant, and ill-defined stripes, which gradually approximate towards the posterior extremity of the body, where they unite in forming an obtusely conical point just within the anal flap: the median of these seven stripes is interrupted at the interstices of the segments, and slightly dilated near the middle of each segment; the next on each side of the median stripe is interrupted on the anterior half of each segment, and dilated on the posterior half; thus forming a series of blotches: the dilated portion of the dorsal area is very pale, and forms an almost white side-stripe: below this and forming part of the ventral area is a very distinct dark brown stripe on each side, and between these the belly is pale, but is intersected throughout by two very indistinct smoky stripes scarcely darker than the ground colour. This larva feeds on the capsules and seeds of *Euphrasia Odontites* (red eyebright), and in feeding may be observed gnawing a hole in the capsule, or with its head and two anterior segments of the body immersed in the cavity, quietly devouring, one by one, the seeds which it contains: the seeds in each capsule are few in number, white, oblong, and adorned

with a number of longitudinal keels; when one is removed from the capsule, and cautiously, I may say judgmentally, presented to the larva, he will instantly recognise it, and, grasping it firmly in his six legs, will consume it while still in that position, just as a squirrel does the kernel of a nut that has been cracked for him. On the 10th of August, Mr. Bryant, so well known as a careful observer of insect economy, presented me with eggs of this very pretty species; but I was then entirely ignorant of the food-plant of the larvæ, which died almost as soon as they emerged from the egg-shell. Subsequently Mr. Bryant has carefully searched the seeding spikes of the *Euphrasia* which he observed was growing abundantly near the Caterham habitat of the moth, and succeeded in taking the nearly full-fed larvæ, which, with his customary kindness, he has presented to me, and thus enabled me to describe a larva totally unknown both in England and on the Continent of Europe: the larvæ were full-fed on the 19th of October.—*Edward Newman.*

*Description of the Larva of Pterophorus zophodactylus, Dup. (P. Loewii, Zell.)*—Larva half an inch long, rather stout: colour light yellowish green, semitransparent (to the naked eye pubescent), with three rows of spines on each side of the dorsal line, which is a very narrow, claret-coloured, streaky mark, commencing on the 2nd or 3rd segment, and dying away as it approaches the anal segment; subdorsal and spiracular lines not visible in some specimens, in others slightly so as light streaks: spiracles dark rings: head small, slightly darker than the body and retractile: the larva tapering towards the head and anus. Pupa purplish flesh-colour; the wing-cases change to dark purple-brown about two weeks after making up, and the moth emerges a few days afterwards: the larvæ feed upon the common centaury in July, August and September; but it is remarkable, alike of this and some other plume-moths, that they differ fully a month in their time of appearance; thus, last year I bred the species early in August; to-day (Sept. 19) my first perfect insect appeared, and I have still larvæ not full-fed.—*C. S. Gregson; Fletcher Grove, Liverpool, September 19.*

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*Entomological Notes, Captures, &c.*

*Argynnis Niobe in the New Forest.*—Being upon an entomological visit to Lyndhurst in last July, I there purchased of a local entomologist an unset variety (as I supposed) of Adippe, which I set to show the under side. On taking it to the British Museum last week, I was informed that it had all the true characters of Niobe; and such it now appears to me undoubtedly to be. I have since written to Mr. Gerrard, of whom I purchased it, for particulars of its capture; and he writes me, “The specimen of Adippe purchased by you was taken by me in 1868: it was flying with Paphia and other Adippe at Lyndhurst, about the middle of July.” My object in writing is to ascertain whether other specimens have been taken of late years, and, if so, whether entomologists regard Niobe as a distinct species or only a variety of Adippe. I have felt half inclined to forward you my specimen for examination, but, when one only possesses *one* specimen, one hardly likes to subject it to the tender mercies of the post-office. Is the variety of *V. Urticæ* with *confluent spots* considered very rare? I have one taken in North Hants.—(Rev.) *W. Hambrough; Worthing, October 3, 1869.*

*Yellow Females of Colias Hyale.*—In a letter which I received a short time since from Colonel H. Macchio, of Vienna, he says:—“I have reserved a yellow female *Colias Hyale* for you. I believe many of these yellow females have been passed over in this country for males, as among the small number of specimens of this butterfly which I saw last year, not more than thirty or forty, I found four of them.”—*Henry Doubleday; Epping.—Ent. Mo. Mag. for October.*

*Colias Edusa in Lancashire.*—A young collector of this town captured a fine specimen of the above at Southport last month: during his visit he noticed two more specimens.—*R. Kay; 2, Spring Street, Bury, Lancashire, September 30.*

*Sphinx Convolvuli in Greenwich Park.*—This morning I took a fine specimen of *Sphinx Convolvuli* at rest on the trunk of a chesnut tree in Greenwich Park.—*W. West; 6, Green Lane, Greenwich, September 13, 1869.*

*Remarkable Variety of Bombyx Quercus.*—I have bred two *Bombyx Quercus*, male and female: the female is transparent, and has a brown fringe all round its wings: the male

is almost black; it is only barred on the upper wings. — *Mark Kershaw*; 12, *Hillgate Street, Hurst Brook, Ashton-under-Lyne, September 17, 1869.*

*Deiopeia pulchella at Folkestone.*—On October 1st, I captured *Deiopeia pulchella* in a turnip-field on the hills at the back of this town. I kicked up the insect whilst shooting, and, being aided by its sluggish and feeble flight, soon boxed it: it is a male in fair condition.—*Thomas H. Briggs*; *Mill House, Folkestone, October 2, 1869.*

*Deiopeia pulchella near Usk.*—I took this insect on the 8th of October, at the foot of the Wyndcliff: it had just settled on an ivy-blossom.—*Mary Carbonell*; *Usk, Monmouthshire, October 10, 1869.*

*Lythria purpuraria in Essex.*—Mr. Button is the fortunate captor of three specimens of *Lythria purpuraria* in Essex: they are all somewhat wasted, but not enough so to render the species at all doubtful.—*E. Newman.*

*Sterrha sacraria at Southsea.*—The other day I kicked up out of grass a fine male specimen of *Sterrha sacraria*. — *Henry Moncreaff*; *Southsea, October 10, 1869.*

*Hydrilla palustris near Norwich.*—On June 5th I had the good fortune to take, by means of light, a male of *Hydrilla palustris* at a very short distance from this city.—*Charles G. Barrett*; *Norwich.—Ent. Mo. Mag. for October.*

*Catocala Fraxini, &c., at Colchester.*—Last night I took a rather poor specimen of *Catocala Fraxini* at sugar. Three or four specimens of *Sphinx Convolvuli* and one larva of *Stauropus Fagi* have also been taken here during the last few days.—*W. H. Harwood*; *St. Peter's, Colchester, September 25, 1869.*

*Acronycta Alni at Derby.*—On the 19th of August I took a larva of *Acronycta Alni*: it spun up the next day in an elm-leaf. It was crawling on some railings under wych elms: no other trees were near, except oak, and that was at a distance of from twenty to thirty yards. I found one last year on the same road, but it had been injured, and it died.—*G. Baker*; 47, *Kedleston Street, Derby, September, 1869.*

*Margarodes unionalis at Gravesend.*—Mr. Button has just shown me a beautifully perfect living specimen of *Margarodes unionalis*, which came to light last night (Oct. 17th) at Gravesend.—*E. Newman.*



*Margarodes unionalis* near London. — On Monday, the 4th of October, I captured a specimen of this *Pyralis* at a gas-lamp on the road-side between Camberwell and Forest Hill. I am indebted to Mr. Doubleday for kindly naming the specimen, also for some very interesting information respecting the species. He says, "There is something very strange in the appearance of this southern species in this country, for the only known food of the larva is, I believe, the olive." It occurs commonly at Cannes.—*J. P. Barrett*; 33, Radnor Street, Peckham, S.E.

*Margarodes unionalis* in the Isle of Wight. — I took a moth which I supposed to be *Margarodes unionalis*, on an apple-tree, on the 11th of October. I send it to you for identification. — *J. Pristo*; Alverstone, Whippingham, Isle of Wight, October 19, 1869.

[The specimen is certainly correctly named so far as England is concerned: Mr. Doubleday informs me that English specimens do not closely correspond with continental ones, but that he knows of no other continental specimens nearly allied. This insect making its appearance as it is now doing is a very noteworthy occurrence.—*E. N.*]

*Anesychia echiella*.—Mr. Button has taken a beautiful and unmistakable specimen of this hitherto doubtfully British insect: it is a grand addition to our lists.—*E. Newman*.

*Cidaria russata* and *C. immanata*. — I believe one of the principal points of distinction between the imagos of *Cidaria russata* and *C. immanata* is generally understood to be the time of their appearance, *Russata* flying in May and again in August, and *Immanata* being on the wing in July. That this cannot be relied upon, I think will be clearly seen from the following observations. Last year I forwarded to Mr. Doubleday a specimen of a *Cidaria* I had captured here in August, which he said he believed was a specimen of *Immanata*, but wished to see further examples before giving a definite opinion. In the beginning of September last I took the species rather commonly in a wood near here, living specimens of which, with two batches of eggs, I sent to Mr. Doubleday, who at once pronounced them to be *Immanata*. Another circumstance in favour of their identity as *Immanata* is that I could detect neither birch nor sallow (the food of *Russata*) anywhere in the immediate neighbourhood. As all my specimens

of *Immanata* were taken amongst alder (many of them beaten from the branches), I have an impression that its larva feeds upon it; and I failed to find a specimen of the species where alder did not grow. — *Geo. T. Porritt; Huddersfield, October 18, 1869.*

*Autumnal Brood of Dianthæcia capsophila.*—Four specimens of *Capsophila* (three males, one female) have appeared in my breeding-cages during the last month (September). The larvæ which produced the moths were captured at Douglas in July, and became pupæ about the end of that month: these have been kept in a room without fire, with a western aspect, and certainly in no way forced. The bulk of the brood are still in the pupa state, and I have no doubt will remain so until next May or June. I have for years past taken *Capsophila* at large and fresh from the pupa, throughout the months of May, June, July and August, and have supposed them all to be of one brood, of irregular appearance, produced from larvæ of the previous year; but it now seems probable the autumnal specimens are the product of the larvæ of the same spring. Still the species cannot be called double-brooded, as assuredly larvæ hatched in September and October could not feed up the same year, or indeed feed at all, as there are neither flowers nor seeds on the *Silene* plants at this season. Neither is it probable that some individuals of the species pass the winter in the egg and some in the pupa state. As, however, there is no reason to doubt that this autumnal production of abortive moths does occur naturally and constantly, it would appear that the habits of the insect are to some extent at war with the conditions in which it is now placed. Is it a very improbable guess that, under climatal conditions slightly different from those of the British Islands at the present period, the species has formerly been double-brooded or would become so? and that either extinction or such further variation as will bring it into exact accordance with present conditions, awaits the species? The Atlantic-fauna theory has perhaps followed the Island of Atlantis and almost disappeared beneath the waves of time; but there are still, so to say, scraps of floating wreck on the surface, in the curious localization and geographical distribution of certain species, of which *Capsophila* is one, being confined, so far as I know, to the south-eastern

shores of Ireland, the adjacent Isle of Man, the Pyrenees and the Alps.—*Edwin Birchall; Newlay, October 15, 1869.*

*Epunda lutulenta at Gravesend.*—Sept. 27th, I took two; 28th, ten; 29th, two; from Oct. 1st to 7th, five: all taken at ivy-blossom. Of the nineteen, four were males and fifteen females. To obtain them in good order they should be captured early in September, but ivy is not then in blossom; and with one exception, taken last year, I have seen none at sugar.—(*Rev.*) *P. H. Jennings; Longfield Rectory, Gravesend, October, 1869.*

*Leucania L-album in Kent.*—I took a specimen of *Leucania L-album* on the 8th of the present October, at sugar, in a wood near Canterbury, and have sent it to Mr. Doubleday for the name.—*F. J. Parry; 103, Northgate Street, Canterbury, October 22, 1869.*

*Leucania L-album in Kent.*—The *Noctua* which I received this morning is *Leucania L-album*: it has never been taken in England before to my knowledge, but I always thought it would occur here, as it is very common in France. This species is double-brooded, and Guenée says that the second brood is always much more numerous than the spring brood. *Henry Doubleday; Epping, October 20, 1869.*

*Leucania vitellina near Brighton.*—During the latter end of last month two specimens of *L. vitellina* were taken at sugar near Brighton—one on the 20th, by Mr. A. Gates, a hard-working entomologist, and sold by him to Mr. Vaughan, of London, for 7s. 6d.; the other was taken by Mr. Meldola, of London, who came down for a week's sugaring. I understand that both obtained about two dozen *Agrotis Saucia* at the same time.—*T. W. Wonfor; Brighton, October, 1869.*

*Depressaria Cnicana at Southsea.*—I enclose for your acceptance two specimens of a *Depressaria* which I am told is *D. Cnicana*, and which I bred from larvæ found in rolled-up leaves of *Eryngium maritimum*. I am told that a specimen of *D. Cnicana* was sent to Mr. Stainton to name last summer; if so, mine is not the first capture of it in England, but I expect that I am the first to rear it from the larva and to record its habitat. In the summer of 1866 the larva was very abundant, but last summer I could only find about two dozen after several evenings' search. I should have sent the species to you before now, but was under the impression

that it was only a dark variety of *D. Applana*; in fact one of my correspondents returned it with that name attached, and another as a variety of *Nemorella*.—*H. Moncreaff; Southsea, October 4, 1869.*

*Hydroporus cuspidatus, &c., at Southsea.*—I send for your acceptance a few specimens of *Hydroporus cuspidatus*, a species new to England: I took them a few evenings since from a pond on the north side of our island. At the same time I took *Cnemidotus cæsus* in some abundance; *Pelobius Hermanni*, several very soft specimens, apparently fresh from the pupæ; *Hydroporus picipes*, *H. parallelogrammus*, *H. latus*, *H. planus*, *H. tinctus* and *H. lineatus*, common. By beating the bushes, *Litodactylus leucogaster*, *Coccinella 19-punctata* by dozens; *Coccidula scutellata* and *C. rufa*, common. In another part of the island I took *Bagous lutulosus*, not common, and with it *B. eucерatus, n. s.*, which I have had some time in my collection as *Phytonomus Rumicis*. The whole of the above-mentioned Coleoptera were named for me by Mr. Crotch.—*Id.*

*Note on Earwigs.*—Among the numerous moths, beetles and flies that are attracted by light in the calm, mild autumnal nights, *Labia minor* is of frequent occurrence. Sometimes, when it opens its elytra and prepares to fly, its wings do not readily unfold, and it immediately recurves its abdomen and applies its forceps to them, and then they expand at once as if a spring was loosened. The use of the forceps in folding up the wings was suggested in print many years ago. The exotic species of this family are numerous, and the forceps is very various in size and form, and there is a wide field for research in noticing how this appendage is employed in the manipulation of the wings.—*F. Walker; Elm Hall, George Lane, Wanstead.*

*Flights of Insects: Syrphidæ on the South Coast.*—At Margate, on August 24th, there came a great number of these insects, so as to attract the notice of all visitors. Many specimens were taken, amongst which I have identified *Syrphus balteatus*, *S. decora*, *S. tæniatus*, *S. topiarius*, and *Eristalis tenax*? The wind was then blowing from the east, and it was very hot weather. The pier at Ramsgate on the same day was almost covered with them, and everyone said they came from the Channel. After this the wind was from

inland, but it was too fresh and breezy for many to remain, and they had become so scarce on the 9th of September that with difficulty seven or eight specimens were procured. The servant at one of the houses in Clifton Terrace, Margate, says that she had to go to all the windows with a dust-pan and brush to take them away from the window-ledges, and I have been given to understand that it was the same in most of the houses at the place. They went by strange names, but the most common one amongst the ignorant was that of "horse-stingers," from their appearance. You have already noticed flights of this class of insects in the 'Zoologist,' and Mr. F. Smith, of the British Museum, tells me that he saw, some years since, the line of surf on the beach for miles covered with the dead bodies of *Syrphus pyrastris*, so that they might have been taken up by shovels full: this was at Bourne-mouth, and the insects had been drowned in the sea and their remains thus cast ashore. The same thing, he tells me, was observed to occur at the back of the Isle of Wight, which is not far off. Hence these flights would appear to be not uncommon, although when they do occur they are worthy of note, and hence my communication. — *C. Horne* ; *Upper Norwood, October 13, 1869.*

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*Death of Dr. Maclean.*—It has become my duty to record the loss of one of the most observant and most accurate of our economic entomologists: Allan Maclean, Doctor of Medicine, and Fellow of the Royal College of Surgeons, died at his residence in the Lexden Road, Colchester, on the 5th of September, 1869, in the 74th year of his age. He was the son of Sir Lachlan Maclean, also a Doctor of Medicine, who practised for a number of years at Sudbury. The deceased was sent at an early age to the then celebrated school at Bury St. Edmund's, where he remained twelve years, and on obtaining a Tancred Scholarship he proceeded to Caius College, Cambridge, and, graduating in physic, shortly afterwards established himself at Colchester, being elected Physician to the Hospital, and continuing to practise in that town for nearly half a century. His great *forte* was observation of the living objects of Natural History, and in this

department of Entomology he has had no equal in this country. His life-histories of *Apatura Iris*, *Limenitis Sybilla*, and *Argynnis Aglaia*, are the most perfect and complete of any that have yet seen the light: his patience was inexhaustible, and the greatest treat in entomological conversation I have ever enjoyed was his own narrative of watching the progress of these proceedings: he could tell at a glance the sex of the butterfly he was watching, and, if a female, could at once decide on the business she had in hand; the mere every-day occupation of feeding was conducted in so different a manner from the more important task of oviposition, that he could instantly decide on which of these objects she was bent. No sooner was he perfectly certain that an egg of either of these species had been deposited, whether high up in the tangled wood, on the leaves of the honeysuckle, in some of the clearings on the willows, or near the very ground on the leaves of the violet, than he would at once possess himself of a treasure scarcely large enough to attract the notice of any other observer: having once secured the egg, he never failed in rearing it to a perfect insect; and thus the previously obscure economy of many a rarity was made known. In the sister science of Ornithology, Dr. Maclean was equally expert, and his skill in procuring the living bird was probably never surpassed. No sooner had the vernal migration commenced than the Doctor was on the alert to observe his feathered favourites: no action could escape him; and thus by indomitable patience and perseverance he acquired an unequalled knowledge of our insectivorous birds. Of this knowledge he constantly availed himself in securing even the most wary. By observing the manner of flight and course taken by a bird, he learned so to prepare his nets that they were invisible to the bird, but yet strong enough to secure it: these nets were suspended with exquisite delicacy by the side of hedges or in ditches, in such a manner as to fold up and envelope the bird directly it flew against the net, and thus it was secured without the slightest injury. In gardening, also, Dr. Maclean was preeminently successful; the varieties of peas, as well as garden flowers, which he raised from seed, have become well known and highly esteemed by the horticulturist. —  
*Edward Newman.*

# THE ENTOMOLOGIST.

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[PRICE 6D.

## *Gregarious Spiders of Paraguay\*.*

WHILST I was in the Legation I had an excellent opportunity of studying the habits of the gregarious spider, which is an apparent exception to the rule that the Araneæ are the most unsocial and bloodthirsty of animals. These spiders when full grown have bodies about half an inch in length, black, with the exception of a row of bright red spots on the side of the abdomen, four eyes, remarkably strong mandibles, and stout hairless legs nearly an inch in length. They construct in concert immense webs, often thirty feet long and eight deep, generally between two trees, and ten or twelve feet from the ground.

Across a roadway is a favourite station with them, and when so placed the webs are invariably at a sufficient height to allow equestrians and bullock-carts to pass beneath; but I could generally touch them with my whip; for if too high they would have missed the flies and moths, their principal food, which do not rise far from the ground.

In the Patio, the grassy courtyard of the Legation, was a small garden; the beds bordered with bricks, and fenced in. It was rarely entered, except by the stooping old crone Basilio's mother, and the spiders had stretched six of their huge nets between a large Cape jasmine and a clump of orange and peach trees, the latter thickly covered with a variety of mistletoe, poetically called by the natives "orphan plant." The trees were about forty feet apart; the spiders had extended two strong cables, as thick as pack-thread, to form the margin of each of the webs, the lower being only four feet from the ground, and between them was a light loose net-work, imperfectly divided into webs, each presenting about a square foot of surface. Each of these sub-webs was occupied by a spider

\* From 'Seven Eventful Years in Paraguay,' by G. F. Masterman.

from sunset till a little after sunrise, the six containing I should say two thousand of them altogether. But they often changed their location, and a double stream was always passing along the cables, apparently strengthening them as they came and went; and sometimes three or four would be lying in wait within a few inches of each other, but I noticed they always gave the lines a quick impatient shake whenever a companion left the main rigging, which were the public gangways, and ventured on to the lighter threads. In passing they crawled over or under each other without hesitation, unlike beetles or ants, which always pause when they meet.

Soon after sunrise they left their webs, and, retreating to the shade, formed two or three large masses, as big as a hat, under the thick foliage of the jasmine; there they remained motionless till sunset, when the black lump crumbled to pieces,—it was a curious sight to see the process,—and then, in a leisurely way, the spiders scattered themselves to their aerial fishing. The air swarmed with mosquitoes, which were caught in great numbers, but were too small game, and remained on the threads till hastily swept away by the spiders; for they made the webs conspicuous. The larger flies, and especially the moths, were at once pounced upon and devoured by the nearest spider or several of them; and I have often seen half a dozen feeding amicably together on the body of the same insect.

I also satisfied myself that they are not content with merely sucking the juices of their prey, but devour the soft parts altogether: of moths they would leave but the wings, of beetles all but the abdomen. Their fangs and jaws are greatly developed (I have several times allowed them to strike the former into my finger, but I felt no pain beyond the slight pain as they entered), and are well suited for tearing and comminuting.

Another peculiarity is that they swallow every part of their web that may be broken by the wind. If such an accident occurred, the nearest spider gathered up the loose threads, rolled them into a bale and immediately ate it. I have arrested them in the act, and found that the silk had been abundantly moistened with clear saliva preparatory to bolting it. I was long puzzled by the difficulty, how was the



first thread, often sixty or seventy feet long, thrown from tree to tree? for intervening bushes made it impossible to adopt the native theory, that they made fast to one trunk, descended it, travelled over the ground to the other, ascended, holding on to the line and then tightening it. I was fortunate enough one day to see how it was accomplished.

There was an arch of ironwork over the mouth of the "algibe," to hold the bucket-chain, and I saw a spider perched upon it, busily forming a light loose bale of silk, nearly as large as its own body, which was soon borne away by the wind, and caught in the leaves of a neighbouring tree, the spider, after a time, tightening it, and then crossing back and forth on the line, adding to its thickness on each journey, until it was strong enough to support a web. If the weather were wet or windy they remained huddled together till it cleared up, and the next day the webs which had been blown away were replaced. Several others had been thrown from the trunk of one tree to another in the grounds, but these were all high enough for the horses to pass beneath; but although I have several times demolished those in the garden, they were invariably woven as low as before. They were tenanted about two months, and then every spider suddenly disappeared; but I soon found afterwards, under the leaves of the trees, several large bags of eggs, evidently left by them.

I have said that these traits—working in concert, and meeting without battle—are but apparent exceptions to the general rule; for I am of opinion that whilst they thus labour amicably together they are immature, and so soon as the reproductive function comes into play the usual ferocity of the race appear. There is then a sanguinary battle; the few survivors, all females probably, devour some of the slain provided for a future brood, and then die also. I think so, because they are all of one size in the same web, crowd together to sleep exactly as young spiders generally do, and they disappear suddenly, leaving no stragglers behind them. I could find no remains of the slain I must admit; but the activity of the swarming ants, those scavengers of hot climates, would account for that. All must have noticed that spiders, for some days or weeks after being hatched, remain on friendly terms together, and spin an irregular web, common to all. I

think, therefore, the gregariousness of this variety may be viewed as the retarded development of one particular function; else why should they disappear so suddenly, and when their usual food is as abundant as ever?

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With reference to the foregoing extract, I should like to ask some of your correspondents who are well acquainted with the Araneidea whether there are any four-eyed spiders known? Blackwall says, in the Introduction to his history of the 'Spiders of Great Britain and Ireland,' "All spiders at present known have two, six, or eight eyes," and, on the principle of the difference in the number of eyes, divides them into the three tribes of Octonoculina, eyes 8; Senoculina, eyes 6; Binoculina, eyes 2; which he says include all species hitherto discovered. Has Mr. Masterman discovered a new tribe of spiders, or is his observation inexact? Also, does the structure of spiders admit of their swallowing the substance of their prey or devouring their webs as Mr. Masterman relates the Paraguayan species to do? The pharyngeal aperture is described by Blackwall as "minute," and only adapted for the passage of liquids.—*E. Birchall; Newlay, October 30, 1869.*

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#### *Entomological Notes, Captures, &c.*

*Cidaria russata* and *C. immanata*.—So much has been said about these two species lately that I reluctantly make a few remarks about them, in reply to Mr. Porritt's communication (*Entom.* iv. 353). *C. russata* is always double-brooded, and appears on the wing in May and August. *C. immanata* is single-brooded, and appears in July, but it continues on the wing a long time, and I have often taken specimens in August and the beginning of September. There is no difficulty whatever in distinguishing the perfect insects, if they are in good condition, except in the case of suffused specimens where the markings are nearly obliterated, and these rarely occur. The eggs of *C. russata* are of a dirty white colour, those of *C. immanata* bright yellow. The

larvæ of the first-named species feed upon elm, willow, birch, whitethorn, strawberry, &c. : very few larvæ of *C. immanata* have been found, and I believe they have all occurred upon the wild strawberry; they may, however, also feed upon alder, but this tree does not exist in our forest, where *C. immanata* was formerly very common. I have fed all the larvæ, which I have reared from the eggs, upon strawberry. The late Mr. Hopley kindly procured me some eggs from Orkney in August last year. These hatched early in April, and the moths appeared the beginning of July: they are the most remarkable specimens that I have seen, and are quite different in colour from any that I have bred before, some of them being black with clearly-defined white markings.—*Henry Doubleday; Epping, November 15, 1869.*

*Yellow Females of Colias Hyale.*—Since reading the remark by Mr. Doubleday respecting the yellow female of *Colias Hyale* taken in Vienna, I have looked over my series of this insect, and find four specimens which are of the yellow colour of the males, but which from the stoutness of the abdomen I should decidedly consider to be females. One of these (captured by Mrs. Cox) has a beautiful tinge of the colour of *Edusa* in the middle of the fore wings, as mentioned by us at p. 179 of No. 60 of the 'Entomologist' (December, 1868). As I have given and exchanged many specimens without closely examining them, it is very likely there were many other yellow females among our eight hundred specimens, captured by us near Margate in July and August, 1868. I should be very glad to show these varieties to anyone caring to look at them.—*H. Ramsay Cox; West Dulwich.*

[I have carefully examined these specimens in company with Mr. Bond, and we are both decidedly of opinion that they are females: it must therefore be concluded that we have two forms of female in *Hyale* corresponding with those of *Edusa*, but that the numerical ratio of the pale one is very much greater in *Hyale* than in *Edusa*.—*E. Newman.*]

*Pterophorus scabiodactylus*, Gregson, a new *British Plume*.—At page 186 of the 'Entomologist' for December, 1866, appears a life-history of *Pterophorus plagiodactylus*, by myself, but as subsequent discoveries of plume larvæ have confirmed me in opinion that the species there described is not the

plagiodyctylus of our continental friends, their plagiodyctylus having a perfectly distinct larva from the species I discovered feeding upon *Scabiosa columbaria*, I have given it the name of scabiodyctylus; and it will be merely necessary to erase "plagiodyctylus" on the above page, and substitute "scabiodyctylus," to correct this error. I have long suspected the bipunctidactylus, *Haworth*, of the older English cabinets, was identical with or very nearly allied to the plagiodyctylus of continental collections. A little care in that direction will, I think, prove that we have also another nearly-allied species in that group,—larger, stronger and darker, and sitting with its wings slightly deflexed, and the hind legs carried straight out in repose: this species stands in my collection as *P. Hirundodyctylus*: I have made figures of a plume-larva I discovered where I took the perfect insect: the larva is distinct from any species I know, but as I did not breed the perfect insect the matter must remain an enigma.—*C. S. Gregson; Fletcher Grove, Liverpool.*

*Cirrhœdia xerampelina* at Catford Bridge, near London.—On the 2nd of September I took a single specimen of *C. xerampelina* at sugar near Catford Bridge. I believe it to be the first record of the species so near London.—*W. C. Rochfort; 62, Hill Street, Peckham, S.E., October, 1869.*

*Lemiodes pulveralis* again.—Mr. Meek reports, in the 'Entomologist's Monthly Magazine' for November, the capture of four specimens of this obscure insect, one in the Isle of Wight and three at Folkestone: it will be recollected that the late Mr. Stephens records it in 'Illustrations of British Entomology' as having been taken at Darenth Wood and Maldon, but he subsequently learned that this was an error, which he himself corrected: these more recent specimens should be examined and verified by Mr. Doubleday before the name can be admitted into our lists.—*E. Newman.*

*Xyleutes Cossus: singular habit.*—I have been deeply interested in your history of the goat-moth in No. 71 of the 'Entomologist.' We in Cheam (that is to say several entomologists) know full well the destructive character of this insect. We have only just to take a walk into Nonsuch Park, and as soon as we enter the gates the evidence of its presence is clear: fine old elm trees of one hundred and fifty or two hundred years' standing, right and left of the avenue, are

succumbing to the insidious enemy. There is a certain time at the latter end of summer when the full-grown larvæ take to coming out of the trees and crawling about the road: the children bring them to me constantly, in consideration of a trifle. I have tried to keep them several times. I lost one two months ago, and found it the other day, partly embedded in a book, enwrapped in a yellowish silken cocoon, but still in a perfect caterpillar state nevertheless. I have two pupæ now, one of which I have had in that state two years, and yet shows no sign of coming out: the cocoon of this is white.—*J. Brown; Cheam, near Sutton, Surrey, November 10.*

*Deilephila lineata at Cheam.*—During this summer, just three months ago, the host of the 'Red Lion' inn at Cheam captured, in the public parlour, a fine specimen of *Deilephila lineata*.—*Id.*

*Monohammus Sutor in Scotland.*—On the 25th of August a specimen of this fine longicorn was captured by a workman on the timber at the mouth of one of the coal-pits in this neighbourhood. It was brought to me alive the same evening, and in perfect condition.—*Robert Hislop; Blair Bank, Falkirk.*

*Monohammus Sutor at Brighton.*—A specimen of the above insect has recently come into my possession: it was taken in the vicinity of Brighton some four or five years ago. The locality given is the Warren Copse, and the date of capture the end of July or beginning of August.—*J. H. Greenstreet; 33, Whittington Road, Bath Road, Peckham, October 25, 1869.*

*Nest of Crabro sexmaculatus.*—To your readers who study Hymenoptera it may be interesting to learn something of the economy of a little bee which was found at Quebec, by Mr. N. H. Cowdry, on the 11th April, 1865. As soon as the larvæ consume the equal quantity of food provided by the parent, each about the same time transforms into a pupa, but before this change the force of nature constrains it to be further secured within the walls of its cell, and the final work of the larva is to spin a thin silken cocoon wherein the pupa remains until it attains the parent form, about the end of June. Rennie informs us that the carpenter bee (*Xylocopa violacea*) of Europe "occupies several weeks in these complicated labours," and that as each egg "is separated from

the other by a laborious process, the egg which is first laid will be the earliest hatched; and that the first perfect insect being older than its fellows in the same tunnel, will strive to make its escape sooner, and so on of the rest. The careful mother provides for this contingency. She makes a lateral opening at the bottom of the cells. Réaumur observed these holes in several cases; and he further noticed another external opening opposite to the middle cell, which he supposed was formed, in the first instance, to shorten the distance for the removal of the fragments of wood in the lower half of the building." It is apparent that this mode of exit does not occur in the raspberry-canec occupied by the Canadian species; and the fact that all the eggs examined in a series of cells, on the 11th of April, were of equal freshness, induces me to state that I am not satisfied with Renne's statement as to its being obvious that bees occupying the lower cells will be hatched before those in the upper. There may be, in some species, a short lapse of time between the perfection of each individual in a series of cells, but it is of little consequence and does not incommode them. It appears to me that they make little effort to escape until the uppermost cells are vacated. I have seen a species of *Megachile* two days cutting through its cocoon, and it seemed in no hurry to leave its cell; while during this time other specimens, that occupied the same group of cocoons, came forth one after another. I sent this raspberry-boring bee to Dr. Packard, and I quote from his letter dated May 8th, 1866, as follows:—"I am glad to trace the habits of this species (*Crabro sexmaculatus*, *Say*). I only wish I had a larva and pupa. They build often in the empty hollow stems of elders and raspberries, occupying and refitting the holes excavated by *Ægerians* and other borers." It will be seen from my description of the nest and larva-food of this species, that it does not agree with the usual habits of *Crabronidæ*; the food of the larvæ of our genera of the latter family, as hitherto recorded, consists of *Articulata*. The bee obtained from the raspberry-canec is a small obscure insect, a little over two-fifths of an inch long, and the only specimen in my possession is now broken, having lost the abdomen. I do not remember noticing spots on any of the specimens, and I am satisfied that the one in my cabinet is a duplicate of

that sent to Dr. Packard. Not having Say's description, I am at a loss to understand his reason for naming this insect *sexmaculatus*. Is the male spotted? or is it possible that there are two kinds of females, as occur among the *Apidæ*? If the latter is the case, has our *Crabro* one with six spots, and the other spotless? These questions are not penned with a view of disputing its identity. The words previously quoted are conclusive that I communicated to Dr. Packard what I then knew of its history. Thus, then, we have discovered another species of the parasitic genus *Crabro*, generally known as sand wasps, imitating the habits of *Prosopis* and *Sphecodes* among the *Andrenidæ* and *Ceratina*, *Xylocopa*, and other wood-boring or what are termed carpenter bees among the *Apidæ*. With increased knowledge, I have no doubt but that other species, hitherto classed among the parasitic Hymenoptera, will be found making nests in similar situations, and provisioning the cells with vegetable substances.—*William Couper; Ottawa, Ontario.*—‘*Canadian Entomologist.*’

*Locusts at Truro.*—Several specimens of *Locusta migratoria* were taken in this town on the 9th of October: I have only seen one of them, and that I have in my possession alive.—*Arthur Nix; Miner's Bank, Truro, October 11.*

*Locusts at East Looe.*—I have now before me, under a glass shade, two living specimens of *Locusta migratoria*—one caught on the 10th and the other 11th Oct.: they feed somewhat freely on any green vegetable, and are tolerably active: they appear to use the spines on the back part of the hind legs as a means of defence, which the captor of one of them found by experience, as it caused four distinct punctures at once, drawing blood from each. They appear in excellent condition, not a mark or blotch on either. I see by the local paper to-day that a specimen was taken at Plymouth and one at St. Austle on Saturday last; and I hear that two were seen here on Friday, but not captured.—*Stephen Clogg; East Looe, Cornwall.*

*Locusts in Devonshire and Cornwall.*—There have been about thirty locusts taken in Plymouth and its vicinity, most of them in the streets, a few in dwelling-houses: they appear to have arrived early on the morning of the 9th of October, and not to have gone far inland, but to have

extended along the coast from Plymouth to Penzance, where it is recorded one has been taken. Our coast is too rugged for any to be washed on shore if drowned at sea in attempting to cross from the Continent, which they must have done. I find that the prevailing wind around the British Isles and North of France was for some days easterly, and at Plymouth on the evening of the 8th it was south, and by the next morning it had changed to south-east, the wind evidently in favour of the insects landing on this coast. The heat in the shade on the 8th and 9th was 74° and 76° Fahr., a temperature which must have materially influenced the migration.—*G. C. Bignell*; 8, *Clarence Place, Stonehouse, Plymouth, November 11, 1869.*

*Captures of Lepidoptera in the New Forest.*—During the past season we have met with the following species in various parts of the Forest, besides many commoner ones not worth recording:—*Leucophasia Sinapis*, common in May and June: of the August brood we saw but one example. *Pieris Cratægi*, forty-six specimens flying in young fir-woods. *Colias Edusa*, saw one specimen. *C. Hyale*, saw one specimen in June. *Argynnis Paphia*, in abundance everywhere: of the female black variety, “*Valezina*,” we captured twenty specimens, besides missing several others: this singular variety is, we believe, generally considered to be confined to the New Forest; it may therefore prove interesting to some to know that we met with a fine specimen in a wood near Sturry, Kent, several years ago; the net caught on a thistle, consequently the specimen escaped. *A. Aglaia*, males common, females rare. *A. Adippe*, common; also *Selene* and *Euphrosyne*, both common. *Vanessa Polychloros*: hibernated specimens were common in April; the larvæ were also very abundant in June, from which we bred a fine series: we only saw about twenty specimens of the new August brood: our bred specimens emerged the beginning of July; is this not remarkably early? *Limenitis Sibylla*, abundant; also bred from larvæ found on honeysuckle. *Arge Galathea*, a few. *Satyrus Semele*, common. *S. Hyperanthus*, common. *Thecla Rubi* and *Quercus*, both abundant. *Lycæna Ægon*, abundant. *L. Argiolus*, males common, three females. *Nemobius Lucina*, three. *Thymele Alveolus*, common. *Thanaos Tages*, a few. *Macroglossa Stellatarum*, a few. *M. Fuci-*



formis, about 150 specimens flying at the blossoms of Rhododendrons: we noticed they always preferred the light crimson varieties to the other colours. *M. Bombyliformis*, ten specimens. *Chærocampa Porcellus*, one. *Hepialus Hectus*, common. *Z. Trifolii*, common. *Calligenia Miniata*, a few. *Lithosia Mesomella*, not rare. *L. Aureola*, two. *L. Complanula*, a few. *Euthemonia Russula*, males common. *Cheilonia Villica*, two. *Arctia Fuliginosa*, one. *A. Mendica*, two females. *Liparis Monacha*, one. *Eriogaster Lanestris*, larvæ in large colonies on sloe and hawthorn. *Saturnia Carpini*, a few larvæ. *Epione Advenaria*, several. *Eurymene Doloraria*, two specimens. *Pericallia Syringaria*, one. *Boarmia Consortaria*, two. *Tephrosia Consonaria*, three. *Pseudopteryx Cytisaria*, several. *Nemoria Viridata*, one. *Hemithea Thymiararia*, several. *Ephyra Porata*, *Punctaria* and *Trilineararia*, frequent. *Acidalia Trigeminata*, three. *Corycia Temerata*, several. *C. Taminata*, abundant. *Selidasema Plumaria*, one. *Aspilates Strigillaria*, common. *Macaria Liturata*, two. *Melanthia Rubiginata*, several. *Anaitis Plagiata*, common. *Eubolia Palumbaria*, common. *Scotosia Undulata*, one. *Lobophora Viretata*, two. *Coremia Propugnata*, a few. *Acidalia Subsericeata*, one. *Tanagra Chærophyllata*, several. *Cilix Spinula*, common. *Platypteryx Unguicula*, not rare. *M. Euphorbiata*, common. *Pyrausta Punicealis* and *Purpuralis*, common. *Herminia Barbalis*, several. *E. Glyphica*, *P. Hamula*, *Endotricha Flammealis*, swarming among fern. *Ennomos Angularia*, one. *Erastria Fuscula*, two. *Halias Prasinana*, three. At sugar we did but little, and only captured the following:—*Thyatira Batis*, fresh from the pupa and in lovely condition as late as the first week in September: is not this rather remarkable? *Cymatophora Diluta*, common. *Hydræcia Nictitans*, one. *Cerigo Cytherea*, abundant. *Agrotis Puta*, one. *A. Saucia*, not rare. *Noctua Umbrosa*, one; *Baja*, two; *Triangulum*, three; *Neglecta*, two. *Cosmia Diffinis*, one. *Hadena Contigua*, one. *Rusina Tenebrosa*, common. *Triphæna Fimbria*, *Orbona* and *Janthina*, not rare. *Gonoptera Libatrix*, two. *Catocala Sponsa*, six. *C. Promissa*, two. We found the best time for catching the *Catocala* was about twenty minutes after sunset, long before darkness had set in: most of our specimens were taken before 8.15 p.m. *Pyramidea*

Oculea, Xanthographa, Suffusa, &c., swarmed at all the trees; also Trapezina in every possible variety, from nearly white to dark mahogany-colour. Acosmetia Caliginosa we obtained pretty freely by sweeping the long grass in damp woods: most of the specimens were more or less damaged: we are indebted to Mr. S. J. Capper and Mr. A. Owen for furnishing us with the exact locality of this insect; also to Mr. J. Gerrard, of Lyndhurst, for much valuable information respecting the Forest. The above were captured within a radius of about sixteen miles. Among other insects of various kinds, brought to us by small boys, &c., were specimens of Halias Quercana, Bajularia, Extersaria, &c., and of course Caja and B. Quercus, in various stages of mutilation, from white to perfectly transparent wings. At the commencement of the season insects were out very early: Thecla Rubi and Polyommatus Argiolus were quite over before the end of April. Later in the season the case was different: we found Pieris Cratægi in splendid condition the last week in July, which is, we think, unusually late for this species.—*H. Ramsay and Julia Eva Cox; West Dulwich, S.E.*

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*Proceedings of the Entomological Society of London.*

May 3, 1869.—H. W. Bates, Esq., President, in the chair.

Mr. Dunning exhibited a specimen of the common *Cetonia aurata*, found in a garden at New Cross on the 11th April: it was partly covered with earth, and appeared to have just emerged from its underground hybernaculum, whence it had been prematurely tempted by the first warmth of spring.

Mr. Frederick Smith exhibited both sexes of *Cynips*, the male of which had at last been detected by Mr. Walsh in America. The oak-apples on the black-oak (*Quercus tinctoria*) are first observed in May, and reach their full growth in a few weeks; by the middle of June male and female gall-flies (*Cynips quercus spongifica*, *Osten-Sacken*) emerge from a small proportion of them, say one-fourth; the remaining three-fourths do not develop flies until the autumn, and then produce gall-flies (*C. q. aciculata*) closely allied to, yet quite distinct from, those produced in June, and out of thousands

of the autumnal flies which were examined not one was a male. Mr. Walsh placed some of the autumnal form (*C. q. aciculata*) on oak trees, and they created galls, from some of which were obtained the spring form (*C. q. spongifica*); whilst a few produced the autumnal form (*C. q. aciculata*), and all the latter were females: these last again were placed on isolated oaks, galls were formed by their puncturing, and from these the spring form (*C. q. spongifica*) was again obtained: from which observations it was to be inferred that the two forms are not distinct species, but dimorphous forms of the same species. From the red oak (*Quercus inanis*) a different gall was obtained, smaller than the former, and the central cell not woody: from these galls came male and female gall-flies (*Cynips quercus inanis*, *Osten-Sacken*), which were undistinguishable from the spring form of *C. spongifica*, but no autumnal form of this fly had been discovered. Mr. Walsh felt himself compelled to consider the flies distinct, because the galls were different and were obtained from distinct species of oak; but the gall-flies were exactly alike. An account of Mr. Walsh's observations had been given in 'The American Entomologist,' of which Mr. Smith mentioned that, though 6000 copies were struck off, the early numbers were already out of print.

June 7, 1869.—Frederick Smith, Esq., in the chair.

Mr. Stainton exhibited drawings of the larva and pupa-case of *Gelechia atrella*, and was now able to corroborate the observation of Mr. Jeffrey that this species is a *Hypericum* feeder. At the previous meeting of the Society, Mr. De Grey had given Mr. Stainton some *Hypericum* stems containing larvæ, which had since produced *Gelechia atrella*: when full-fed the larva cuts off the terminal portion of the stem, which appears to be slit up the side for the purpose of flattening it, and by spinning together the edges it forms a flexible case, within which it turns to the pupa.

Mr. F. Smith exhibited a bee which he had found on the previous day at Southend, in grass, so completely covered with larvæ of *Meloe* that it was impossible to determine the species of the bee until the greater part of the parasites had been removed; he did not remember to have ever found larvæ of *Meloe* so late in the season: there were forty or fifty of them on the bee when exhibited, when captured there

must have been 300 or 400: the bee proved to be *Melecta armata*, itself a parasite in the nests of *Anthophora*.

Mr. F. Smith exhibited living specimens of *Physonota gigantea*, a remarkably beautiful species of *Cassididæ*, which however loses all its colour within two or three days after death; indeed some of them had faded and become dull during life: they were brought to Liverpool from Central America in a cargo of logwood, and were said to have dropped out of the cracks of the wood.

Mr. F. Smith exhibited a smooth corneous luminous larva from Uruguay, which he supposed to be a *Pyrophorus*. When placed in a dark room the head appeared bright red, and each side showed ten bright green spots; the lateral spots were almost always visible (in the dark), the red only occasionally, and sometimes would remain invisible for ten minutes together; the colours were so intense that Mr. Smith compared them to the red and green signal-lamps of a railway train. It was said by the sender to be capable of living for two or three months without food, if placed in earth which was kept damp and occasionally changed.

*July 5.*—F. Smith, Esq., in the chair.

Mr. F. Smith exhibited a living male of the field-cricket (*Acheta campestris*), found near Farnham; and remarked that though he required to be placed in the sun to make him begin his song, moisture seemed to give him an additional stimulus and made him sing the louder.

Mr. F. Smith also exhibited specimens, some of them alive, of *Pissodes notatus*, from Bournemouth, showing great variation in size.

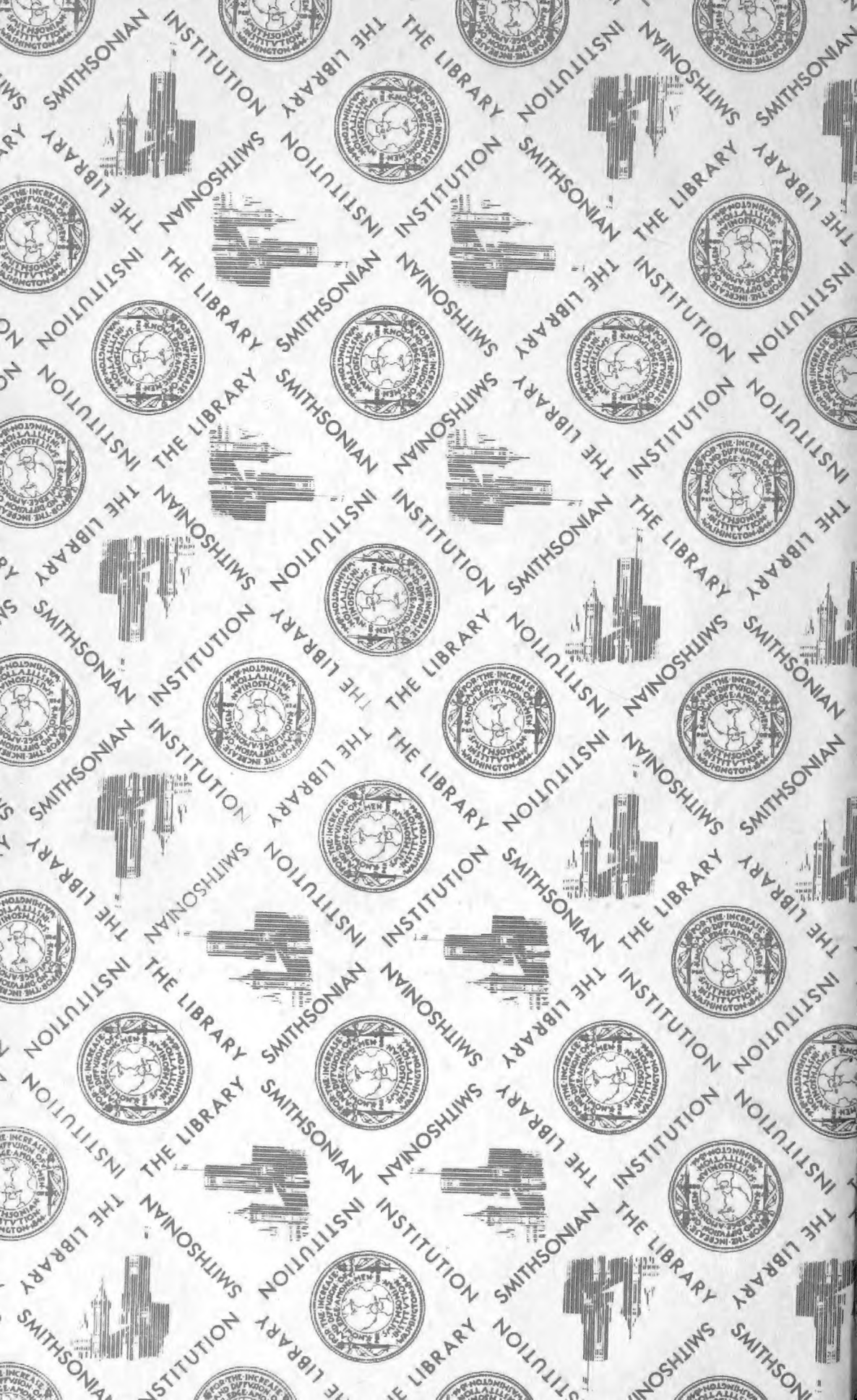
Mr. Pryer exhibited a specimen of *Eupithecia togata*, taken in the previous month: the occurrence of the species in this country had not been recorded for some years. The locality was not stated. Mr. Dunning mentioned that he had taken the insect at Brandon, Suffolk, in 1849.

The Hon. T. De Grey exhibited three specimens of *Cosmopteryx orichalcea*, from Wicken Fen, Cambridgeshire; and six of what Prof. Zeller held to be a dark variety of *Carpocapsa Juliana*, though they were (part of a large number) bred from beech in April.

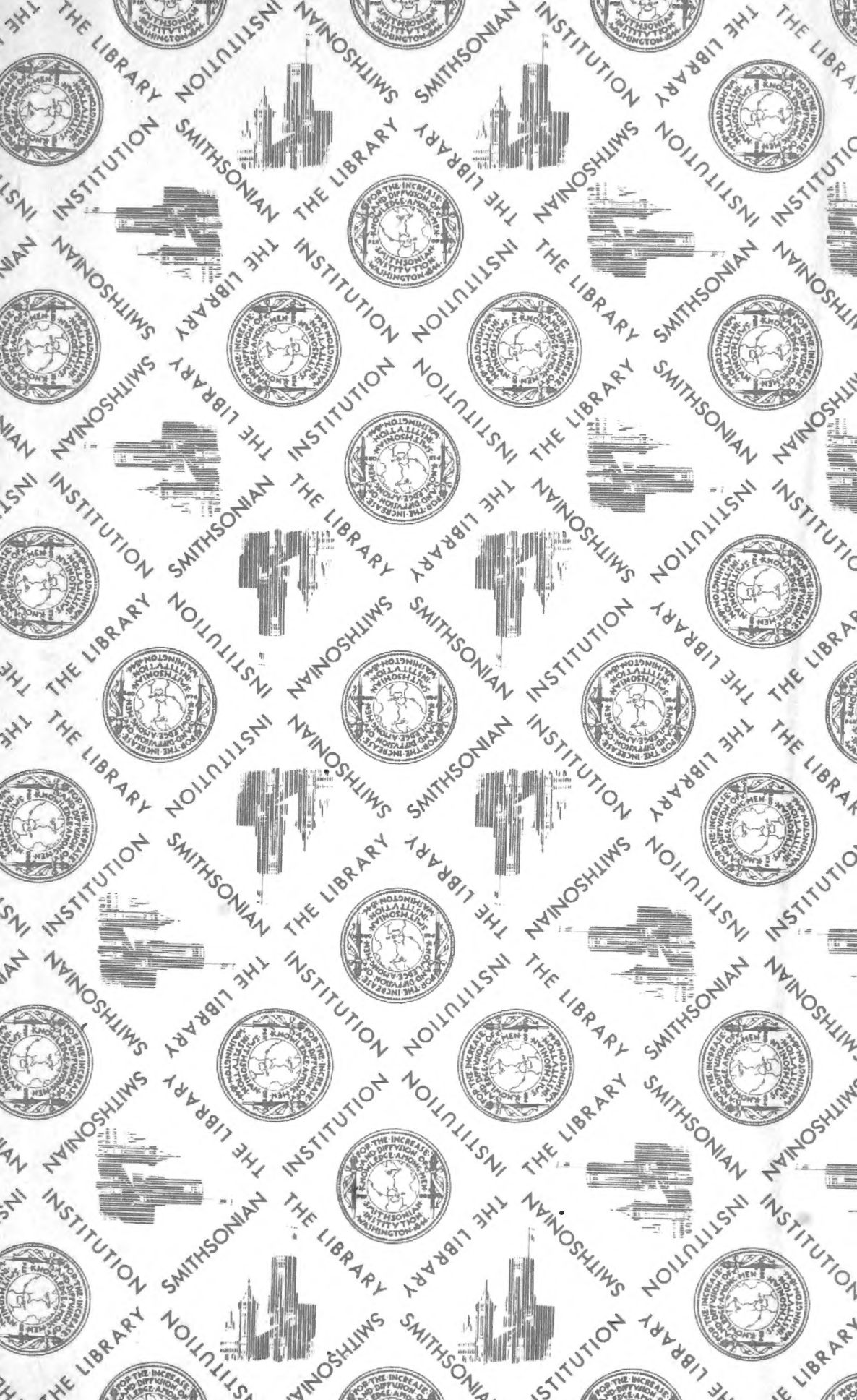












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